DELIRIUM OBSERVATION SCREENING (DOS) SCALE AS A PREOPERATIVE PREDICTIVE TOOL FOR DEVELOPMENT OF POSTOPERATIVE DELIRIUM IN ELDERLY

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Submitted By

DR RUSHAL

DEPARTMENT OF ANAESTHESIOLOGY
DAYANAND MEDICAL COLLEGE AND HOSPITAL
LUDHIANA, PUNJAB

DECLARATION BY THE CANDIDATE

I hereby declare that the thesis entitled "**DELIRIUM OBSERVATION SCREENING (DOS) SCALE AS A PREOPERATIVE PREDICTIVE TOOL FOR DEVELOPMENT OF POSTOPERATIVE DELIRIUM IN ELDERLY**" submitted towards partial fulfillment of the requirements for the award of **MD in Anaesthesiology** degree to BFUHS is a compilation of original work carried out by me under the supervision of **Dr. Shikha Gupta**, Professor, Department of Anaesthesiology, **Dr. Namrata**, Associate Professor, Department of Anaesthesiology and **Dr. Gagandeep Singh**, Professor & Head, Department of Neurology. No part of this thesis has formed the basis for the award of any degree previously.

_____

Dr. RUSHAL
Department of Anaesthesiology,
Dayanand Medical College & Hospital,
Ludhiana, Punjab

Date:

Place:

CERTIFICATE OF SUPERVISORS

This is to certify that the work incorporated in this thesis entitled "**DELIRIUM OBSERVATION SCREENING (DOS) SCALE AS A PREOPERATIVE PREDICTIVE TOOL FOR DEVELOPMENT OF POSTOPERATIVE DELIRIUM IN ELDERLY"** has been carried out by **Dr. Rushal** under our direct supervision. The data incorporated in this thesis is original and genuine and has been carried out by the candidate himself.

Signature of Supervisor

Dr. Shikha Gupta
Professor
Department of Anaesthesiology
DMC&H, Ludhiana

Signature of Co-Supervisors

Dr. Namrata
Associate Professor
Department of Anaesthesiology
DMC&H, Ludhiana

Dr. Gagandeep Singh
Professor & Head
Department of Neurology
DMC&H, Ludhiana

Date:

ENDORSEMENT BY THE HEAD OF THE INSTITUTE

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Principal

Dr. Sandeep Puri
Principal
DMC&H, Ludhiana

Date:

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Signature

Dr Rushal
Department of Anaesthesiology,
Dayanand Medical College & Hospital,
Ludhiana, Punjab - 141001

Date:

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Dedicated

to

my Family,

friends

&

Teachers

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Dr. Rushal

ABBREVIATIONS

ASA	American Society of Anaesthesiologists
BI	Barthel Index
CAGE	Cutting Down, Annoyance, Guilt and Eye-opener questionnaire
CAM	Confusion Assessment Method
CNPI	Checklist of Non-verbal Pain Indicators
CVA	Cerebrovascular accidents
DOS	Delirium Observational Screening Scale
DOS-R-98	Delirium Rating Scale (Trzepacz et al. 1988)
DSM	Diagnostic and Statistical Manual of Mental Disorders
HDSR	Hasegawa Dementia Scale (revised)
IQCODE	Informant Questionnaire on Cognitive Decline in the Elderly
MMSE	Mini-Mental State Exam
POD	Postoperative delirium
SOFA	Sequential Organ Failure Assessment
TURP	Transurethral resection of prostate

ABSTRACT

Introduction: Postoperative delirium is one of the major causes of increased postoperative morbidity and mortality in the elderly population (Incidence ~ 5-52%). It impairs postoperative recovery leading to increased length of hospital stay, increased healthcare cost, increased one year mortality, functional decline and long-term cognitive impairment, etc. Hence, we have studied the efficacy of Delirium Observation Scale (DOS scale) as a preoperative predictive tool for development of postoperative delirium in the elderly.

Aim of Study: Accuracy of DOS scale for better and early preoperative detection of postoperative delirium in elderly.

Materials & methods: A prospective randomized study was conducted on 100 elderly patients (>60 years of age[2]) of ASA II, III undergoing non-cardiac surgery under regional anaesthesia. In all the patients, MMSE and DOS scale was applied preoperatively at the time of pre-anaesthesia checkup, one day prior to surgery. The scores of MMSE and DOS scale were evaluated after shifting the patient to the recovery room, 24 and 48 hours after surgery. The scores of the MMSE and DOS scale were recorded and evaluated for efficacy of preoperative detection of postoperative delirium in the elderly. Data thus collected was analyzed statistically.

Results: In our study, the DOS Scale has been found to be more accurate for picking up delirium with Sensitivity of >99.99% and specificity of >88.89%. The incidence of delirium among elderly patients (>60yrs) undergoing noncardiac surgeries under regional anaesthesia came out to be 39% during the study period. Risk of POD was found to be more with increasing age, in bedridden patients, in patients with the history of Cerebrovascular accidents, Obese patients and in patients with history of alcoholism. Pain intensity was found to be an independent risk factor for delirium.

Clinical Significance: This study has focused on the efficacy of DOS scale as a preoperative predictive tool for the detection of postoperative delirium in the elderly undergoing non cardiac elective surgery.

Keywords: Postoperative delirium (POD), DOS scale, MMSE scale, elderly, predictive tool, cognitive function.

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INTRODUCTION

Postoperative delirium (POD) is one of the major causes of increased postoperative morbidity and mortality in the elderly population undergoing surgery. The Diagnostic and Statistical Manual of Mental Disorders - V (DSM-V) recognises delirium as a clearly defined disease entity. The term Delirium comes from a Latin word “delirare” which means “to deviate from the furrow”. [1]

POD is an acute change in the cognitive status characterized by fluctuating consciousness [2] and inattention occurring after surgery. It also includes disturbances in awareness and cognition that develop acutely and fluctuate frequently throughout the course of the disease. Hallmark symptoms of delirium are disturbances in consciousness, concentration disorders and cognitive disorders such as disorientation, memory disturbances and hallucinations. It occurs within 24 to 72 hours after a procedure. The presentation of delirium may vary from an apathetic, inactive state to an agitated, hyperactive state. [3] The incidence lies in the range of 5 to 52% after non cardiac surgery.[4]

As the elderly population is increasing, the number of elderly patients presenting for anaesthesia and surgery is also increasing. Anaesthetic complications in elderly still mount a challenge for the anaesthesiologist. Systematic screening for the presence of delirium in populations at risk is needed to avoid inadequate detection and as a consequence, inadequate treatment. In the perioperative setting, more attention is given to monitor and treat dysfunction of organs like lungs, heart, liver, or kidney but detection/management of perioperative brain dysfunction is usually ignored. The development of postoperative delirium has some significant potential effects on patient outcomes; however, POD often remains underdiagnosed.

Delirium is often thought to have two predominant forms : hyperactive and hypoactive.[5] The hyperactive form is usually readily identified as the patient is often agitated, aggressive, refuses to cooperate, may pull out

intravenous lines or catheters. These patients also tend to have hallucinations and delusions. These can be very distressing and these patients tend to develop post-traumatic stress disorder after the experience. In contrast, the hypoactive form is characterised by a decrease in psychomotor activity. It is sometimes difficult to differentiate hypoactive delirium, from the residual effects of anaesthesia during the early postoperative period.[5]

Delirium has multifactorial causes and complex pathophysiological mechanisms. Clinical studies of incidence and risk factors associated with POD may provide additional useful clues to the optimal perioperative care of the elderly surgical patients at risk for delirium. Risk identification may also help clinicians to provide patient specific management during the perioperative period.

POD has a deep impact on the healthcare of patients and thus on the healthcare financial management. It impairs postoperative recovery leading to increased length of hospital stay, increased healthcare cost, increased 1 year mortality, functional decline and long-term cognitive impairment [6,7,8], etc. It adversely impacts a patient's quality of life, increases the burden on the patient's family, premature withdrawal from the workplace, and a change in long-term cognitive trajectory. POD has a remarkable influence on prognosis and can lead to worse outcomes such as, aggravation of infections, delayed recovery time and increased postoperative mortality. According to patients, delirium and subsequent cognitive decline are among the most feared adverse events following surgery.[9]

After an initial episode of delirium, the post-episode treatment or intervention has little effect on its severity and duration.[10] However, before its onset, delirium is assumed to be preventable, which emphasizes the importance of early detection and its prevention. It is extremely important to identify patients with potential risk of POD before surgery, which can help clinical decision makers to achieve preventive effect.

Various interventions exist which could improve these outcomes. In order to enact these interventions, the baseline cognitive status of elderly patients must be known.

In Elective surgeries, the modifiable risk factors can be addressed before surgery in order to decrease the risk of POD. It has been reported to be associated with a large number of risk factors: age, dementia, visual/hearing impairment, poor nutritional/functional status, impaired left ventricular function, electrolyte disorder, alcoholism, smoking, high perioperative transfusion requirements, intraoperative pressure fluctuations, frailty, polypharmacy and use of benzodiazepines.

While multiple screening tools exist, many are cumbersome to execute. Efforts have been made to shorten them, but there are many concerns about their specificity.[11-15] The Mini-Mental State Exam (MMSE) is a widely used and much accepted test of cognitive function among the elderly; it includes a 30-point questionnaire of orientation, attention, memory, language and visual-spatial skills whereas Delirium Observational Screening Scale(DOS) is a brief screening tool based on observation. It is a 13-Item scale of verbal and non-verbal behavior which helps to recognise delirium based on the everyday activity[16]. Recent studies[17] suggest the validity of DOS scale as a screening tool for the early detection of delirium. DOS Scale is a screen designed to allow faster and easier identification of delirium.

Early detection and prompt treatment of the inciting factors are of utmost importance to prevent and minimize the deleterious outcomes of delirium.[18]

This will facilitate early aggressive treatment of the predisposing factors and early consent for postoperative deleterious outcomes. To the best of our knowledge, the DOS Scale has never been used to assess preoperative and postoperative delirium in surgical patients. Hence we propose to use MMSE and DOS scale as a preoperative predictive tool for

postoperative delirium and also compare their efficacy in elderly population undergoing surgery.

AIMS AND OBJECTIVES

Primary Objective:

• To calculate the incidence and prevalence of pre and postoperative delirium in elderly patients undergoing noncardiac surgery under regional anaesthesia.

Secondary Objectives:

• To calculate the incidence of new development of delirium postoperatively in cases which were not picked up during initial assessment in the preoperative period.

• To compare the change in the severity levels of delirium postoperatively from preoperative levels in patients with preoperative delirium.

REVIEW OF LITERATURE

Edward R Marcantonio et al in June 2005 compared the outcomes of patients admitted to post acute skilled nursing facilities with delirium, subsyndromal delirium, and no delirium in an Observational cohort study. Five hundred four subjects were chosen from 1,248 consenting subjects aged 65 and older who underwent mental status testing within 5 days of admission to the participating facilities. Subjects who met full Confusion Assessment Method (CAM) criteria were classified as delirious, those with one or more CAM criteria were classified as having subsyndromal delirium, and those with no CAM features were classified as having no delirium. Subjects with delirium were more likely to experience one or more complications than subjects with no delirium. Patients admitted to post-acute skilled nursing facilities with delirium are more likely to experience complications, rehospitalization, and death than patients without delirium.[19]

Christopher J. Jankowski et al in May 2011 evaluated the Cognitive and functional predictors of postoperative delirium using Confusion Assessment Method in elderly patients undergoing elective joint arthroplasty. The objective was to determine whether lower scores on sensitive neurocognitive tests are an independent risk factor for POD in elderly surgical patients, and POD predicts cognitive and functional decline 3 months postoperatively. They concluded that reduced preoperative neurocognitive and functional status predict the development of Postoperative Delirium(POD).[20]

C F Royse et al in April 2011 studied the influence of propofol or desflurane on the incidence of postoperative cognitive dysfunction in a randomized trial of 180 patients undergoing coronary artery bypass surgery. They concluded that early postoperative cognitive dysfunction was significantly higher with propofol as compared with desflurane, but this effect was not seen at 3 months. There was no difference in delirium,

length of hospital stay, or other morbidities. Desflurane was associated with reduced early cognitive dysfunction in this study. [21]

Robbert C. Bakker et al in September 2011 studied the preoperative predictors of delirium after cardiac surgery in elderly patients. They assessed the patients using Mini Mental State Examination (MMSE) preoperatively and used the CAM-ICU scale for diagnosis of delirium postoperatively. They concluded that low MMSE scores and high creatinine levels prior to surgery are important independent predictors of delirium. Patients, who developed delirium after cardiac surgery, showed a lower cognitive functioning before surgery as measured with the MMSE, increased comorbidity when compared with patients who did not become delirious. After surgery, the delirious group experienced more adverse events, and these adverse events could have contributed to the causative factors of a delirium. Moreover, the delirious patients showed an increased 30-day mortality rate. [9]

Yong Guo et al in April 2016 studied the prevalence and risk factors of postoperative delirium in elderly hip fracture patients and concluded that correcting the modifiable risk factors might help prevent postoperative delirium. In this study, they found out the prevalence of Postoperative Delirium after Total Hip Arthroplasty was 21.0% . They concluded that preventive strategies include nutritional support, tight blood glucose control,improvement of liver function, preoperative infection control and minimizing surgical injury or blood loss. [22]

Peng Xue et al in Jan 2016 published a study of 358 patients in which they enrolled patients aged ≥65 years and undergoing TURP. Personal, medical and cognitive data, laboratory assessments, pain intensity, preoperative medications, and details of hemodynamic control were collected as predictors of delirium. POD was assessed using the Confusion Assessment Method in their study. POD occurred in 28 out of 358 cases (7.8%) after TURP, with duration of 1-4 days. Old age and pain

intensity after surgery were found as the risk factors for the development of delirium in elderly patients undergoing TURP. [23]

G.Sousa et al in April 2017 published a study in which they prospectively evaluated all postoperative patients admitted in the Post-anaesthesia Care Unit over a 1-month period for delirium, using the Portuguese versions of the Nursing Delirium Screening Scale. Before surgery, alcohol consumption was inquired and alcohol abuse was assessed by the CAGE (Cutting Down, Annoyance, Guilt and Eye-opener) questionnaire; a score ≥2 defined as alcohol abuse. Two hundred twenty-one patients were enrolled. Delirium was seen in 11% of patients. The incidence of alcohol abuse was 10%. Older patients, higher ASA physical status and alcohol abuse were more frequent in patients with POD. Alcohol abuse was considered an independent risk factor for POD in this study.[24]

Michael S Avidan et al in 2017 conducted a multicentre, international randomised trial that enrolled adults older than 60 years undergoing major cardiac and non-cardiac surgery under general anaesthesia, named, The Prevention of Delirium and Complications Associated with Surgical Treatments [PODCAST]. Using a computer-generated randomisation sequence we randomly assigned patients to one of three groups in blocks of 15 to receive placebo (normal saline), low-dose ketamine (0·5 mg/kg), or high dose ketamine (1·0 mg/kg) after induction of anaesthesia, before surgical incision. Delirium was assessed twice daily in the first 3 postoperative days using the Confusion Assessment Method. 1360 patients were assessed, and 672 were randomly assigned, with 222 in the placebo group, 227 in the 0·5 mg/kg ketamine group, and 223 in the 1·0 mg/kg ketamine group. There was no difference in delirium incidence between patients in the combined ketamine groups and the placebo group. They found out that a single subanaesthetic dose of ketamine did not decrease delirium in older adults after major surgery, and might cause harm by inducing negative experiences.[25]

Chen-guang Wang et al in 2018 investigated the incidence and related risk factors of delirium in elderly patients with hip fracture and concluded that elderly patients over the age of 75 years with the history of diabetes or ASA > II were at higher risk of Postoperative Delirium. The incidence was found to be 19.29%.Older patients are thought to be more susceptible because of the association between aging and the impaired physiologic compensatory capability to adjust to the physical stress of surgery.The changes in the content of central neurotransmitters such as acetylcholine, norepinephrine, epinephrine, and gamma aminobutyric acid are important causes of delirium as the age increases.[26]

Elisabeth C. W. Neefjes et al in February 2019 reported the accuracy of Delirium Observational Screening Scale (DOS) as a screening tool for delirium in patients with advanced cancer and concluded that DOS is an accurate screening tool for delirium in patients with advanced cancer with a sensitivity of >99.9%. They showed that the DOS is a very sensitive and specific instrument to screen for delirium in hospitalized patients with advanced cancer. It can also give an impression of the delirium severity. They concluded that by early recognition of this distressing delirium syndrome using DOS Score, the quality of life of patients with advanced cancer can be improved.[27]

Leandra A. Amado et al in August 2019 conducted a study on preoperative cognitive dysfunction in older elective noncardiac surgical patients in South Africa. They used the Mini-Cog Test for the preoperative objective assessment of cognition. They concluded that undiagnosed pre-existing cognitive dysfunction was common in older patients awaiting surgery. Important risk factors for these include increased age and pre-existing cognitive dysfunction. Patients at risk for cognitive dysfunction should be identified through brief preoperative screening. The prevalence of undiagnosed pre-existing cognitive dysfunction was found to be 57.2% using the Mini-Cog test.[28]

Onuma Chaiwat et al published a study in 2019 to identify the incidence of, and the risk factors for, postoperative delirium (POD) in surgical intensive care unit (SICU) patients, and to determine predictive scores for the development of POD. This study enrolled adults aged over 18 years who had undergone an operation within the preceding week and who had been admitted to a SICU for a period that was expected to be longer than 24 h. They used CAM − ICU score to determine the occurrence of delirium. Of the 250 patients enrolled, delirium was found in 61 (24.4%). The independent risk factors for delirium that were identified by a multivariate analysis comprised age, diabetes mellitus, severity of disease (SOFA score), perioperative use of benzodiazepine, and mechanical ventilation. They concluded that the hospital mortality rate was found to be significantly greater among the delirious than the non-delirious patients.[29]

Arissara Iamaroon et al in 2020 conducted a study to identify incidence, risk factors and outcomes associated with Postoperative Delirium in older adult patients who underwent Noncardiac surgery. Functional and cognitive status were assessed preoperatively using Barthel Index (BI) and the modified Informant Questionnaire on Cognitive Decline in the Elderly(IQCODE), respectively. Postoperative delirium was diagnosed based on the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition criteria. In this study, pre-existing dementia was the strongest risk factor for POD. They concluded that Postoperative Delirium remains a common surgical complication with an incidence of 11.6%. Patients with preexisting dementia and age≥ 75 years are the most vulnerable high-risk group. Collaborative approach to identify patients at risk for delirium and provide perioperative management strategies may help to prevent POD or reduce its severity.[4]

Terry E Goldberg et al in 2020 published a study in which they determined whether an episode of delirium was an independent risk factor for long-term cognitive decline, and whether it was causative or an epiphenomenon in already compromised individuals. Of 1583 articles,

data was subjected from the 24 studies (including 3562 patients who experienced delirium and 6987 controls who did not) were included in a random-effects meta-analysis for pooled effect estimates and random-effects meta-regressions to identify sources of study variance. There was a significant association between delirium and long-term cognitive decline. In all studies, the group that experienced delirium had worse cognition at the final time point. In this meta-analysis, delirium was significantly associated with long-term cognitive decline in both surgical and nonsurgical patients.[30]

Masahiro Matuski et al published a study in 2020 in which they evaluated the incidence and risk factors of Postoperative delirium in elderly patients undergoing urological surgery. They used Hasegawa Dementia Scale - Revised (HDSR) score preoperatively and Intensive Care Delirium Screening checklist postoperatively to assess delirium. They found out that preoperative medical history, cognitive status, low serum albumin level and operative duration were associated with development of delirium. In addition to operative factors, the patient's preoperative condition can influence postoperative delirium. In this study, not only mental conditions, but also physical conditions were independently associated with the incidence of delirium. They suggested that the HDSR scale is a useful tool for assessment of the risk of delirium.The HDS-R can evaluate frontal lobe function, as well as orientation, memory and attention, and give a more precise assessment than the MMSE.[31]

Andrea Kirfel et al in 2021 published a study in which they evaluated 254 elective cardiac surgery patients at the University Hospital Bonn. The patient was considered to be in delirium, if one of the tests Confusion Assessment Method for ICU (CAM-ICU) or Confusion Assessment Method (CAM), 4 'A's Test (4AT) or Delirium Observation Scale (DOS) was positive on one day. Approximately 50% of elderly patients who underwent cardiac surgery developed POD, which is associated with an increased ICU and hospital length of stay.[32]

Thomas J Gracie et al in Aug 2021 studied the association of preoperative frailty and postoperative delirium. Nine studies were considered for this meta-analysis. The Fried score or a modified version of it was used in 5 studies for the assessment of frailty. Frailty prevalence ranged from 18.6% to 56%. Delirium was assessed with the Confusion Assessment Method (CAM) or Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) in 7 studies, Delirium Observation Scale in 1 study, and Intensive Care Delirium Screening Checklist in 1 study. The incidence of POD ranged from 7% to 56%. This meta-analysis suggests a significant association between preoperative frailty and POD in elective surgical patients aged 65 years or older. [33]

MATERIALS AND METHODS

1) SOURCE OF DATA

A randomized observational study was conducted in the department of Anaesthesiology, Dayanand Medical College & Hospital, Ludhiana after approval by the Institutional Ethics Committee on a total of 100 elderly patients (age group > 60 years)[34] undergoing noncardiac surgeries under regional anaesthesia. They were assessed with DOS scale for delirium preoperatively during pre-anaesthesia checkup and then postoperatively at the time of shifting the patient to the recovery room, after 24 and 48 hours. The scores of the DOS scale at the respective time intervals were measured as the primary outcome of the study. A written informed consent was obtained from each patient.

2) METHOD OF COLLECTION OF DATA

Inclusion Criterion

- ASA II, III
- Elderly (>60 yrs)age group
- Elective procedures under regional anaesthesia (neuraxial anesthesia or peripheral nerve blocks)

Exclusion Criterion

- History of Neurological Illness i.e. epilepsy, parkinsonism, brain injury or neurosurgery.
- History of diseases such as schizophrenia, bipolar disorder, dementia, mania, depression, compulsive disorders.
- Inability to comprehend English, Hindi or Punjabi language
- Refusal to participate in the study
- Patients on Neuroleptic or antipsychotic medications (Fluphenazine, Haloperidol, Aripiprazole, Clozapine, Olanzapine, Quetiapine, Risperidone, Benzodiazepines, Barbiturates, Chlorpromazine, etc.)
- History of Drug Dependence
- History of surgery in previous 6 months

Routine pre-anaesthesia checkup along with physical examination and relevant investigations was noted. Patients and their attendants were explained about the study being conducted and written informed consent was taken.

Preoperative Delirium was measured using a 13 point - DOS scale by the treating anaesthetist in a secluded area free from noise and distraction. Patients with score 3 or more than 3 were considered to be in delirium.

The premedication given to the patient in the preoperative period was noted. After arrival in the operating room, standard monitoring in the form of SpO2, non-invasive blood pressure (NIBP), five lead ECG, HR, was done throughout the procedure and recorded as per the discretion of the treating anaesthetist. Regional Anaesthesia (Neuraxial or Peripheral Nerve Block) was administered to the patient. The drugs given intraoperatively were noted. During the surgical procedure, operative characteristics such as the type of surgery, the duration of surgical procedure, the type of anaesthesia (neuraxial block or peripheral nerve block), the volume of blood loss, the volume of fluids and blood transfused was recorded. Intraoperative Hypotension (defined as either systolic blood pressure less than 90 mmHg or less than 20% of the baseline blood pressure for more than 5 minutes) and Intraoperative hypoxemia (defined as oxygen saturation of below 90%) was also recorded and treated as per protocol.

The time of shifting of patients to the Postoperative Recovery Room was considered as 0 hour.

In the Postoperative Recovery Room, standard monitoring was done and DOS score was recorded. Postoperative analgesia was given using Inj. Paracetamol (maximum 1g IV per dose 6 hourly). In case of Breakthrough Pain (Checklist of Non-verbal Pain Indicators (CNPI) 4 or more than 4) Inj. Fentanyl 1 mcg/kg IV bolus was given followed by 1mcg/kg/hr by continuous IV infusion and was adjusted upward or downward upto 2mcg/kg/hr as required by fluctuations in analgesic requirements. The

preoperative and postoperative Delirium assessment using DOS Score was done by different anaesthetists in order to remove the study bias. Scores were calculated at respective time intervals (at the time of shifting patient to recovery room, at 24 hours and 48 hours post operatively). Reversible causes of delirium such as electrolyte disturbances were corrected.

Outcome

The following parameters will be statistically analysed :

- Incidence and prevalence of pre & postoperative delirium
- Sensitivity and Specificity of DOS Score

Statistical Analysis

A post hoc power analysis was conducted using the software package, G*Power version 3.1.9.2 (Franz Faul, university kiel, Germany). The alpha level used for this analysis was $p<0.05$ and beta was 0.20. Sample size was estimated from the results of previous study[35] using the sensitivity of DOS score as the parameter, which is the primary outcome of our study. Our sample size came out to be 100 subjects at power of 0.99 and with an effect size of 3.45 with 10% chance of error with $\alpha = 0.05$, $\beta = 0.20$ and confidence interval of 95%.

OBSERVATIONS AND RESULTS

We enrolled 100 elderly patients (age group > 60 years) undergoing noncardiac surgeries under regional anesthesia.

Table 1 - Demographic Characteristics of Patients

	N	Minimum	Maximum	Mean	Std. Deviation
Age	100	60.00	94.00	73.62	8.15
Weight	100	36.00	110.00	74.84	13.90
Height	100	144.00	188.00	165.04	10.65
BMI	100	16.00	39.64	27.42	4.23
BMI	100	16.00	39.60	27.42	4.24
Smoking History (No. of packs per day)	15	1.00	4.00	2.00	1.13
Alcoholic History (No.of drinks per day)	52	2.00	4.00	2.69	0.81

Table 2 - Sex Distribution

Sex	Frequency	Percent
F	44	44.0%
M	56	56.0%
Total	100	100.0%

Demographic profile of all the patients has been summarized in Table 1 and 2. Mean age of the patients was 73.62 years (SD 8.15), and 56% were male.

Table 3 - DOS Score in Preoperative period

DOS SCORE in Pre-op	Frequency	Percent
<3	93	93.0%
> or =3	7	7.0%

This Score was assessed using a 13 point - DOS scale by the treating anesthetist in a secluded area free from noise and distraction, one day prior to surgery. 7% patients were found to be in Delirium preoperatively using this scale.

Table 4 - DOS Score at 0 hr

DOS SCORE at 0hr	Frequency	Percent
<3	82	82.0%
> or =3	18	18.0%

The time of shifting of patients to the Postoperative Recovery Room was considered as 0 hour. Postoperative cognitive assessment using DOS Scale was done by different anaesthetist in order to remove the study bias. 18% Patients were found to be in delirium using the DOS Scale.

Table 5- DOS Score at 24 hr

DOS SCORE at 24hr	Frequency	Percent
<3	80	80.0%
> or =3	20	20.0%

20% Patients were in delirium according to the DOS Scale at 24-hr Interval postoperatively.

Table 6 - DOS Score at 48 hr

DOS SCORE at 48hr	Frequency	Percent
<3	89	89.0%
> or =3	11	11.0%

11% Patients were found to be in delirium using the DOS Scale at 48-hr Interval postoperatively.

Table 7 - MMSE Score in Preoperative period

MMSE SCORE at Pre-op	Frequency	Percent
24-30	94	94.0%
<24	6	6.0%

6% of the patients were found to be in delirium using the MMSE Scale, one day prior to Surgery.

Table 8 - MMSE score at 0 hr (The time of shifting of patients to the Postoperative Recovery Room)

MMSE SCORE at 0hr	Frequency	Percent
24-30	85	85.0%
<24	15	15.0%

15% Patients were found to be in delirium using MMSE Scale.

Table 9 - MMSE score at 24 hr

MMSE SCORE at 24hr	Frequency	Percent
24-30	90	90.0%
<24	10	10.0%

10% Patients were found to be in delirium using the MMSE Scale at the 24-hr Interval postoperatively.

Table 10 - MMSE score at 48hr

MMSE SCORE at 48hr	Frequency	Percent
24-30	92	92.0%
<24	8	8.0%

8% Patients were found to be in delirium using the MMSE Scale at the 48-hr Interval postoperatively.

Table 11 - Comparison of DOS & MMSE Score in Preoperative period

		MMSE SCORE_Pre-op		Total	Kappa value	p-value
		> or = 24	< 24			
DOS SCORE_Pre-op	< 3	93	0	93	0.551	0.001
	≥ 3	1	6	7		
Total		94	6	100		

In the preoperative cognitive assessment, 7% patients were found to be in Delirium. 1 out of these 7 patients was delirious according to DOS Scale but was not picked up by the MMSE Scale. 6% patients were picked up by both DOS & MMSE Scales.

Table 12 - Sensitivity and specificity of DOS Scale at preoperative period

Statistic	Value	95% CI
Sensitivity	100.00%	54.07% to 100.00%
Specificity	98.94%	94.21% to 99.97%
Positive Likelihood Ratio	94	13.38 to 660.40
Negative Likelihood Ratio	0	
Disease prevalence (*)	6.00%	2.23% to 12.60%
Positive Predictive Value (*)	85.71%	46.06% to 97.68%
Negative Predictive Value (*)	100.00%	
Accuracy (*)	99.00%	94.55% to 99.97%

The sensitivity of DOS Scale was found to be 100% and specificity of the DOS Scale came out to be 98.94% in the preoperative period. The positive predictive value of DOS Scale was 85.71% and negative predictive value came out to be 100%. The accuracy of the DOS Scale was 99% at preoperative period.

Table 13 - Comparison of DOS & MMSE Score at 0 hr

		MMSE SCORE_0hr		Total	Kappa value	p-value
		> or = 24	< 24			
DOS SCORE_0 hr	< 3	82	0	82	0.891	0.001
	≥ 3	3	15	18		
Total		85	15	100		

In the cognitive assessment done at 0hr (The time of shifting of patients to the Postoperative Recovery Room),15% patients were delirious according to both DOS & MMSE Scales. However, 3% patients were picked up only by the DOS Scale and not by the MMSE Scale.

Table 14 - Sensitivity and specificity of DOS Scale at 0hr.

Statistic	Value	95% CI
Sensitivity	100.00%	78.20% to 100.00%
Specificity	96.47%	90.03% to 99.27%
Positive Likelihood Ratio	28.33	9.32 to 86.10
Negative Likelihood Ratio	0	
Disease prevalence (*)	15.00%	8.65% to 23.53%
Positive Predictive Value (*)	83.33%	62.20% to 93.82%
Negative Predictive Value (*)	100.00%	
Accuracy (*)	97.00%	91.48% to 99.38%

At 0hr, the sensitivity of DOS Scale was 100% and its specificity was found to be 96.47%.The positive predictive value of DOS Scale was 83.33% and negative predictive value came out to be 100%. The accuracy of the DOS Scale was 97% at 0hr.

Table 15 - Comparison of DOS & MMSE Score at 24hr

		MMSE SCORE_24hr		Total	Kappa value	p-value
		> or = 24	< 24			
DOS SCORE_24hr	< 3	80	0	80	0.619	0.001
	≥ 3	10	10	20		
Total		90	10	100		

At 24-hr postoperatively, 10% patients were delirious according to both DOS & MMSE Scales. 10% patients were not picked up by the MMSE Scale whereas they were found to be in delirium according to the DOS Scale.

Table 16 - Sensitivity and specificity of DOS Scale at 24hr.

Statistic	Value	95% CI
Sensitivity	100.00%	69.15% to 100.00%
Specificity	88.89%	80.51% to 94.54%
Positive Likelihood Ratio	9	5.02 to 16.14
Negative Likelihood Ratio	0	
Disease prevalence (*)	10.00%	4.90% to 17.62%
Positive Predictive Value (*)	50.00%	35.79% to 64.21%
Negative Predictive Value (*)	100.00%	
Accuracy (*)	90.00%	82.38% to 95.10%

At 24-hr postoperatively, sensitivity of DOS Scale was found to be 100% and its specificity was found to be 88.89%. The positive predictive value of DOS Scale was 50% and negative predictive value came out to be 100%. The accuracy of the DOS Scale was 90% at 24 hr.

Table 17 - Comparison of DOS & MMSE Score at 48hr

		MMSE SCORE_48hr		Total	Kappa value	p-value
		> or = 24	< 24			
DOS SCORE_48hr	< 3	89	0	89	0.340	0.001
	≥ 3	3	8	11		
Total		92	8	100		

At 48-hr postoperatively, 8% patients were delirious according to both DOS & MMSE Scale. 3% of the patients were picked up on DOS Scale but not picked up by the MMSE Scale.

Table 18 - Sensitivity and specificity of DOS Scale at 48 hr.

Statistic	Value	95% CI
Sensitivity	100.00%	63.06% to 100.00%
Specificity	96.74%	90.77% to 99.32%
Positive Likelihood Ratio	30.67	10.08 to 93.33
Negative Likelihood Ratio	0	
Disease prevalence (*)	8.00%	3.52% to 15.16%
Positive Predictive Value (*)	72.73%	46.70% to 89.03%
Negative Predictive Value (*)	100.00%	
Accuracy (*)	97.00%	91.48% to 99.38%

At 48-hr postoperatively, sensitivity of DOS Scale was 100% and its specificity was found to be 96.74%.The positive predictive value of DOS Scale was 72.73% and negative predictive value came out to be 100%. The accuracy of the DOS Scale was 97% at 48 hr.

Table 19 - Incidence of Delirium

Delirium	Frequency	Percent
0	61	61.0%
1	39	39.0%

A total of 39% patients were found to be in delirium during the study period.

Figure 1 - Incidence of Delirium

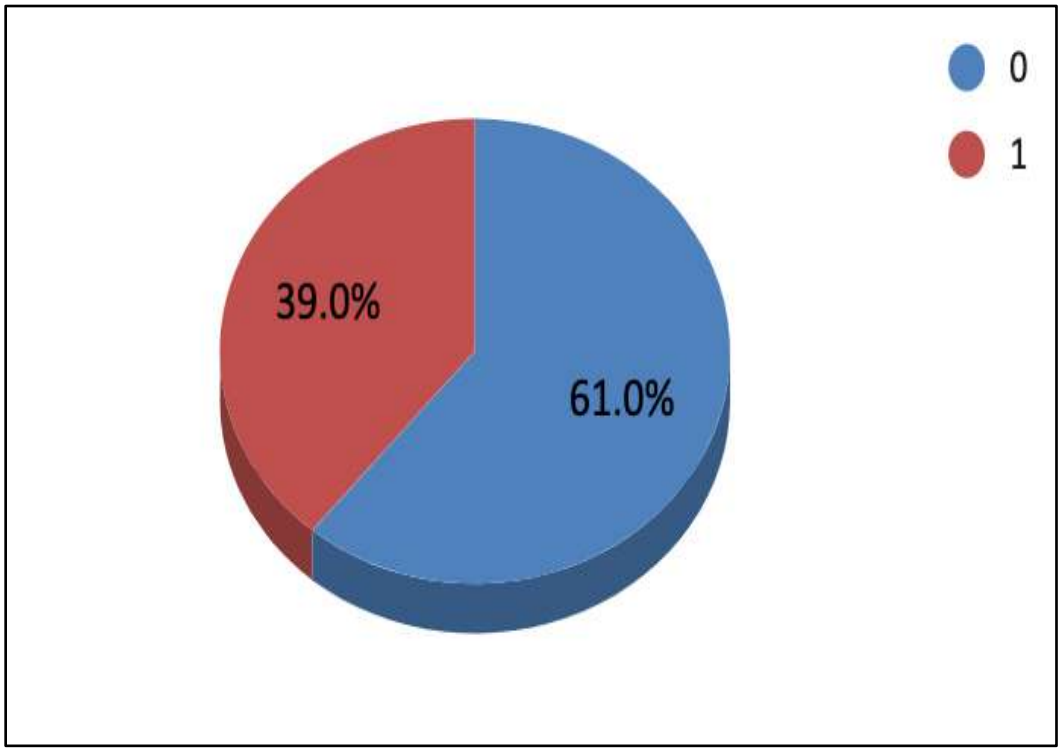


Table 20 A- Factors associated with Delirium

		Delirium				Total	Chi-square value	p-value
		No		Yes				
Sex	F	26	42.6%	18	46.2%	44	0.12	0.729
	M	35	57.4%	21	53.8%	56		
Diabetes Mellitus		35	57.4%	18	46.2%	53	1.203	0.273
	Y	26	42.6%	21	53.8%	47		
ESRD or CKD		60	98.4%	35	89.7%	95	3.719	0.074
	Y	1	1.6%	4	10.3%	5		
Thyroid disease		58	95.1%	39	100.0%	97	1.977	0.279
	Y	3	4.9%	0	0.0%	3		
Hypertension		23	37.7%	14	35.9%	37	0.033	0.855
	Y	38	62.3%	25	64.1%	63		
Cirrhosis		60	98.4%	37	94.9%	97	0.995	0.318
	Y	1	1.6%	2	5.1%	3		
Heart Disease		31	50.8%	27	69.2%	58	3.31	0.096
	Y	30	49.2%	12	30.8%	42		
Total		61	100.0%	39	100.0%	100		

The factors such as Sex of the patient, Diabetes mellitus, ESRD, Thyroid disease, Hypertension, Cirrhosis and Heart disease have no statistically significant association with Postoperative delirium.

Table 20 B- Factors associated with Delirium

	Delirium				Total	Chi-square value	P - value
	No		Yes				
						15.781	0.046
bedridden	0	0.0%	2	5.1%	2		
CKD	2	3.3%	0	0.0%	2		
COPD	0	0.0%	1	2.6%	1		
Covid mild	1	1.6%	0	0.0%	1		
CVA	1	1.6%	3	7.7%	4		
obese class 2	0	0.0%	2	5.1%	2		
Stroke	0	0.0%	1	2.6%	1		
TB	3	4.9%	0	0.0%	3		

Postoperative Delirium has been found to be strongly associated with bedridden patients, patients with a history of Cerebrovascular accidents and Obese patients.

The p-value of study of association between these factors and delirium is statistically significant.

Table 20 C- Factors associated with Delirium

		Delirium				Total	Chi-square value	p-value
		No		Yes				
Smoking History (No. of packs per day)	1	5	8.2%	1	2.6%	6	0.577	0.749
	2	5	8.2%	1	2.6%	6		
	4	3	4.9%	0	0.0%	3		
Total		13	21.3%	2	5.1%	15		

Table 20 D- Factors associated with Delirium

		Delirium				Total	Chi-square value	p-value
		No		Yes				
Alcoholic History (No.of drinks per day)	2	24	39.3%	3	7.7%	27	7.158	0.028
	3	8	13.1%	6	15.4%	14		
	4	6	9.8%	5	12.8%	11		
Total		38	62.3%	14	35.9%	52		

Alcoholism has been significantly associated with Postoperative delirium. Out of 52 alcoholics, 35.9% alcoholic patients were found to be in Delirium. The association between Alcoholic history and Delirium came out to be statistically significant.

Smoking and Delirium have not been found to be statistically associated with each other.

Figure 2 - Association of Alcohol & Delirium

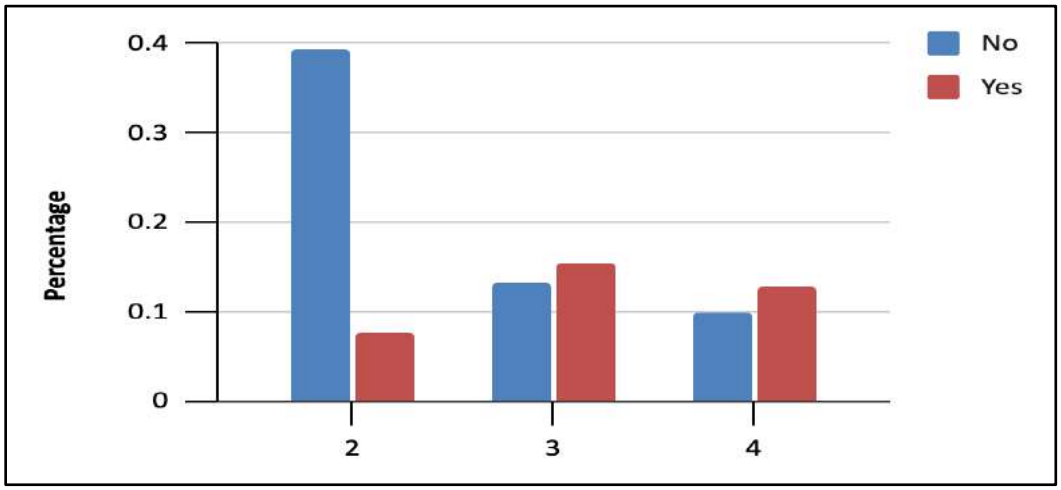
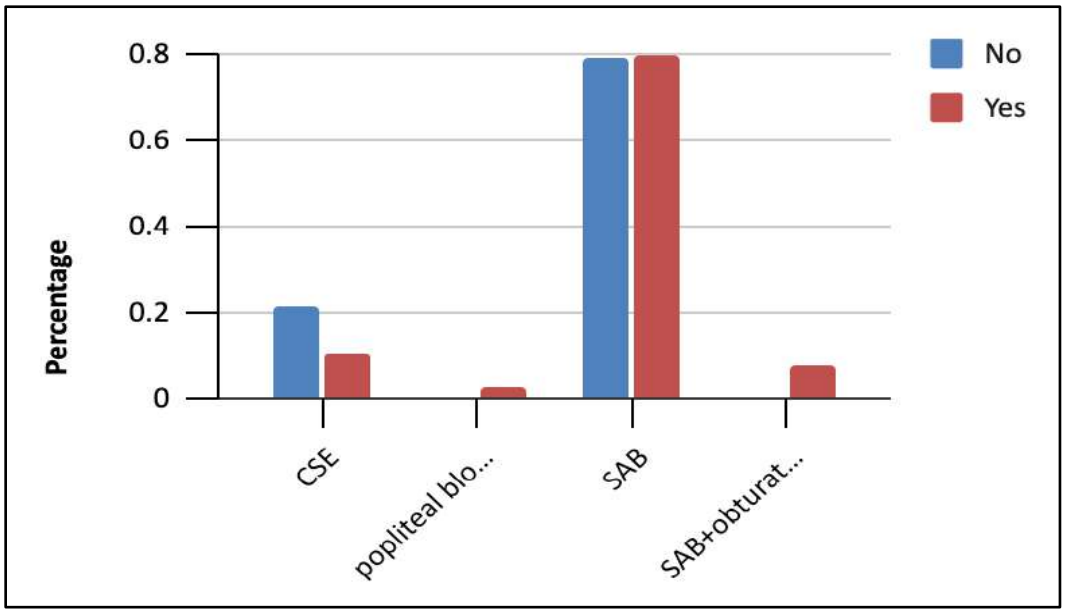


Table 20 E- Factors associated with Delirium

		Delirium				Total	Chi-square value	p-value
		No		Yes				
Type of Anaesthesia	CSE	13	21.3%	4	10.3%	17	7.969	0.047
	popliteal block	0	0.0%	1	2.6%	1		
	SAB	48	78.7%	31	79.5%	79		
	SAB + obturator block	0	0.0%	3	7.7%	3		
Total		61	100.0%	39	100.0%	100		

Figure 3 - Association between Type of anesthesia and Delirium



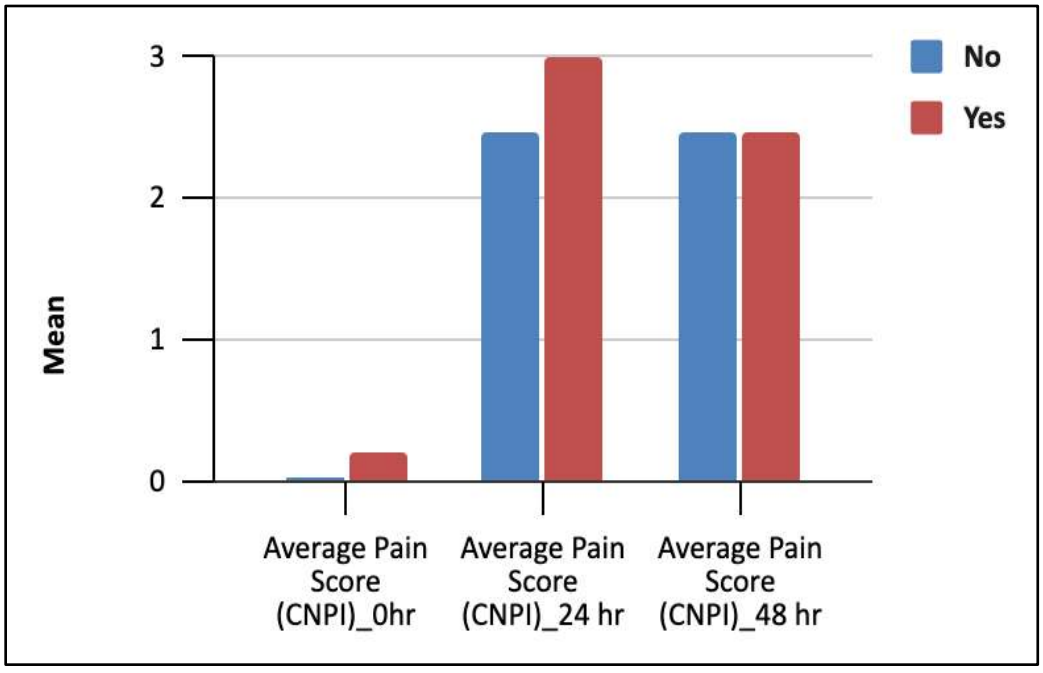
Delirium has been found to be more prevalent in the patients receiving Subarachnoid Block amongst other techniques of Regional anesthesia. 79.5% of the delirious patients received Subarachnoid Block.

Table 21- Association between Pain and Delirium

	No		Yes		Z	p-value
	Mean	SD	Mean	SD		
Average Pain Score (CNPI)_0hr	0.03	0.18	0.21	0.70	-1.460	0.144
Average Pain Score (CNPI)_24 hr	2.46	0.79	3.00	1.26	-1.985	0.047
Average Pain Score (CNPI)_48 hr	2.46	0.79	2.46	0.91	-0.118	0.906

Higher pain scores have been found to be significantly associated with Delirium. The Mean Pain score (CNPI) at 24 hours in delirious patients was 3.00 which came out to be statistically significant.

Figure 4 - Association between pain and delirium



DISCUSSION

This randomized observational study enrolled a total of 100 elderly (> 60 yrs) patients undergoing noncardiac surgeries under regional anaesthesia. They were assessed using both MMSE and DOS scales for delirium preoperatively at the time of pre-anaesthesia checkup one day prior to the surgery, and then postoperatively after shifting the patient to the recovery room (0hr) , 24 and 48 hours after surgery.

Delirium is often associated with lower cognitive and functional levels, increased length of hospital stay, cost, morbidity, and mortality rates. Postoperative delirium(POD) is also associated with a 30-day mortality of 7–10%, compared with 1% in those without delirium.[36] It is a serious complication for older adults because an episode of delirium can initiate a cascade of deleterious clinical events, including other major postoperative complications, prolonged hospitalization, loss of functional independence, reduced cognitive function, and death. POD might start in the recovery room and can occur up to seven days after surgery.[38] It is highly prevalent among the inpatient geriatric population but remains poorly studied.

After an initial episode of delirium, the post-episode treatment or intervention has little effect on its severity and duration.[10] However, before its onset, delirium is assumed to be preventable, which emphasizes the importance of early detection and its prevention. Hence, we used MMSE and DOS scales as a predictive tool for postoperative delirium and also compared their efficacy in elderly population undergoing surgery under regional anaesthesia.

In our Study, the incidence of delirium among elderly patients (>60yrs) undergoing noncardiac surgeries under regional anaesthesia came out to be 39% during the study period. Other reviews also noted the incidence of delirium in the range of 10 to 46% in general surgical population which was comparable with our study.[24] The incidence of POD after endoscopic urological surgery was 7.8% in the study by Xue et al.[23] Whereas

Tognoni et al. reported delirium in 8.8% patients undergoing urological surgery.[39] The incidence of delirium was found to be 21.23% in patients of 60 years and older in the study by Tai et al.[40] Gani et al. reported 26% incidence of delirium in patients who underwent surgery at a urology clinic.[41] In elective joint arthroplasties, the incidence of postsurgical delirium was found to be between 9– 28%.[22] The incidence of delirium in elderly patients in various studies was comparable to the incidence of delirium in our study. The marked variation in incidence of delirium in different studies may be attributed to sensitivity and specificity of various scales that they have used for the detection of POD. Hence, based on various studies, it can easily be said that delirium is a common occurrence in elderly patients undergoing surgery under regional anaesthesia.

We assessed the preoperative cognitive function of 100 patients using the MMSE scale and preoperative delirium using the DOS Scale, one day prior to Surgery in a secluded and noise-free environment. Of these 100 patients, cognitive dysfunction was picked up in 6% patients by the MMSE Scale. DOS scale picked up delirium in 7% patients preoperatively. Out of these 7% patients, 1% patients were not picked up by the MMSE scale. We again assessed the cognitive function of the patients using both the scales just after shifting the patient to the Postoperative Recovery room (0hr). At 0hr, 15% patients were delirious according to MMSE Scale and 18% were delirious according to the DOS Scale. An additional 3% patients were picked up only by the DOS Scale and not by the MMSE Scale. On applying the DOS and the MMSE Scale again after 24 hours postoperatively, 20% patients were found to be delirious by the DOS scale and 10% patients were in delirium by the MMSE Scale. An additional 10% patients were detected to be in delirium by DOS Scale only. At 48-hr postoperatively, 11% patients were delirious according to the DOS scale and 8% patients were in delirium according to the MMSE scale . However, 3% patients were picked up on DOS scale only.

The 13-point DOS Scale was found to be more sensitive in the detection of POD in our study. In a study conducted by Peng Xue et al, they used MMSE scale for assessing the preoperative cognitive function and used CAM (Confusion assessment Method) for the detection of Postoperative delirium after one week and at the onset of confusion related symptoms. No patient was delirious in the preoperative assessment using MMSE scale whereas 7.8% of elderly patients came out to be delirious postoperatively after one week using CAM.[23] In another study done by Arissara lamaroon et al, Barthel Index(BI) and modified Informant Questionnaire on Cognitive Decline in elderly (IQCODE) were used for preoperative assessment of cognitive status of the patients. Postoperative Delirium was diagnosed using DSM-V criteria. They carried out daily assessment of patients for 7 consecutive days after surgery and found the incidence of POD to be 11.6% using DSM-V criteria. They also concluded that the majority of patients (61.3%) developed delirium on postoperative day one. 16.1% patients were delirious on postoperative day 2, 12.9% on postoperative day 3, 6.5% patients on postoperative day 5 and 3.2% on postoperative day 6.[4]

In another study by Elisabeth et al DOS and DOS-R-98 scales were compared in patients with advanced cancer and they found DOS Scale as an accurate screening tool with Sensitivity > 99.9%.[27]

DOS Scale has been proved to be an accurate screening tool in many studies. But to the best of our knowledge, this scale has never been used for detection of POD in the perioperative period. In our study, we compared the DOS Scale with the MMSE scale, which has been used widely to detect POD. In our study, the DOS Scale has been found to be accurate with Sensitivity of >99.99% and specificity of >88.89%.

Delirium is associated with increased morbidity, mortality, and results in high healthcare expenditure, but is often preventable.[42] Hence, it becomes necessary to identify the risk factors for POD and correct the modifiable factors before posting the patient for surgery. In this way, we

can have a better outcome and improve the quality of life for the elderly population undergoing various surgeries.

The risk factors of POD include older age, sex, various medical comorbidities, psychopathological symptoms, preoperative depression, preoperative psychotropic drug use, alcoholism, smoking and various perioperative complications.[43] Other modifiable risk factors of POD include anemia, infection, electrolyte disorders, hormonal disorder, dehydration and renal failure.[23] Correcting these risk factors prior to surgery probably decreases the incidence of POD.

Regarding the age, there are many neurochemical factors predisposing elderly patients to delirium, such as lack of cholinergic reserves.[44]

In hospitalised patients, the risk of delirium increases 36% in the elderly aged 64–74 years and over [45],that is, about 2% per year after the age of 65 years [46].

In our study, Sex of the patient came out to be a non-significant risk factor in the development of POD(p value- 0.729) 56% patients in our study were male out of which 21% male patients were in delirium. We studied 44% female patients, out of which 18% female patients were found to be delirious. A study done by Christopher et al also found no correlation of POD with the sex of the patient which was similar to our study.[47]

There was no association of POD with Diabetes (p value - 0.273), CKD (p value - 0.074), Thyroid disease (p value - 0.279), Hypertension (p value- 0.855), Cirrhosis (p value - 0.318), Heart disease (p value - 0.096) in our study. However in a study done by Katarzyna Kotfis et al, it was found that the elevated preoperative HbA1c level is a risk factor for postoperative delirium in cardiac surgeries,[48] which was contrary to our study. Qinfeng Yang et al conducted a study in which they enrolled patients who underwent primary elective total hip arthroplasties, they concluded that the preoperative risk factors associated with postoperative delirium included diabetes, hypertension, congestive heart failure, valvular disease, pulmonary circulation disorders, peripheral vascular disorders,

coagulopathy and renal failure.[49] Keulen et al. showed that delirium is positively associated with hypoglycemia in patients with diabetes, but not associated with pronounced glycemic variability.[50] There have been lesser studies done on diabetes as a preoperative risk factor for POD, but the results from our study does not suggest association between POD and diabetes, making this a potential future prospect for further research.

Risk of POD was found to be more in bedridden patients, in patients with the history of Cerebrovascular accidents and Obese patients. Out of the 2 bedridden patients in our study, both of them were found to be in delirium. 4 patients had a history of CVA, 3 out of these 4 patients turned out to be delirious. The p value of association of these risk factors with delirium was 0.046 which was statistically significant, suggesting history of CVA, obesity and bedridden patients as independent risk factors of POD. In a study done by Masahiro Matsuki et al, in elderly population >65 years undergoing urological surgery also had positive association with CVA and POD,[31] which was similar to our study. Many studies[51,52] have suggested CVA to be a known risk factor for the development of POD, similar to our study.

Alcoholism too has been positively associated with POD in our study. Out of 52% alcoholics, 35.9% alcoholic patients were found to be in Delirium.[53] The p value of association between history of alcohol intake and delirium came out to be significant(0.028).[54] In a study done by G Sousa et al, out of 11% patients in delirium, 10% of them were alcoholics, which also suggested a positive correlation between alcoholism and POD.[24] However, a recent study done by Peng Xue has found that alcohol consumption is not related to POD, which is contrary to our study.[23] We also found that the risk increases many folds with alcohol consumption in large amounts. In our study, 27 patients consumed 2 drinks per day, out of those 27, 3 patients were found to be in delirium. 14 patients had a history of 3 drinks per day, out of which 6 were found to be in delirium. And amongst 11 patients having a history of 4 alcohol drinks

per day, 5 were found to be in delirium. This clearly suggests that more the amount of consumption of alcohol, more will be the risk for development of POD.

Pain intensity was found to be a risk factor for delirium. Data showed that patients with POD had significantly higher CNPI scores for pain than those who were not delirious. The Mean Pain score (CNPI) at 24 hours in delirious patients was 3.00 which came out to be statistically significant. Vaurio et al studied association between preoperative resting pain, and increase in level of pain(using VAS scale)with delirium. They found that these two factors were independently associated with a greater risk for the development of postoperative delirium.[55] In a study done by Lynch et al, Pain was measured using a visual analog scale (VAS) and patients assessed for pain at rest, pain with movement, and maximal pain over the previous 24 h. Postoperative delirium was diagnosed using the confusion assessment method (CAM). They found out that higher pain scores at rest was associated with an increased risk of delirium over the first 3 postoperative days. They concluded that more effective control of postoperative pain reduces the incidence of postoperative delirium. Their results suggest that better control of postoperative pain may reduce POD.[56] The results of these studies are similar to those of our study.

Another finding of our study was significant intraoperative hypotension and intraoperative hypoxemia did not contribute as risk factors for POD. However, according to the findings of Marcantonio et al, significant intraoperative fall of blood pressure contributes to the prediction of the POD. Marcantonio et al also suggested intraoperative hypotension as a risk factor for POD which was contrary to our study.[57] However, a recent study done by Peng Xue has found that hypotension during surgery is not predictive of POD[24] which was similar to our study. This finding in our study may be attributed to the fact that we did not allow intraoperative Blood pressure and oxygen levels(SpO2) to fall to more than 20% of base level with early medical intervention. We used fluids and vasopressors

aggressively to avoid >20% fall in BP. This may be a contributing factor due to which there was no association between POD and intraoperative hypotension and hypoxemia in our study.

Keeping the risk factors and deleterious outcomes of POD in mind, it becomes necessary to screen the patients for delirium and correct the modifiable risk factors in order to reduce the morbidity and mortality among the elderly patients. Compared to the MMSE Scale, the DOS has shown better sensitivity and specificity. It has the benefits that it is quick to apply, and does not require any training. In a study conducted by Elisabeth C. W. Neefjes et al, the DOS Scale has been shown to be accurate as a screening tool for patients with advanced cancer with a sensitivity of >99.99%.[27]

The inability of the MMSE Scale in picking up delirium can be attributed to the fact that its results are likely to be confounded by language, levels of literacy, and cultural and ethical norms.[58]

The DOS Scale is easy to use, does not require any training, and has the benefit of being easily implicated in daily practice. By early recognition and adequate treatment of this distressing delirium syndrome the quality of life of elderly patients can be improved.

The Limitations of our study are non-inclusion of patients with depressive illness, dementia, mania and compulsive disorders which has decreased the incidence of delirium, as all these disease conditions are also a risk factor for delirium. Any pharmacological intervention was not used in order to treat POD in our study.

In conclusion, the history of CVA, alcoholism, immobility, increased pain intensity and obesity were significantly associated with the development of POD in the elderly population in our study. Additionally, avoiding identified potential confounding factors as anemia, infection, electrolyte disorders, hormonal disorder, neurological dysfunction, dehydration and renal failure, probably decreases the incidence of POD. Combined, the above

measures could help to identify delirious patients and reduce the cost, morbidity, and mortality in elderly patients after surgery.

In order to increase the quality of life in the elderly population undergoing various surgical procedures, it is important to screen these patients for POD and detect POD at an early stage.

Screening for POD must be done at the time of pre-anesthesia checkup for risk stratification and preventive measures should be taken for the patients found to be at elevated risk. The modifiable risk factors should be identified and corrected early. The patients should be well informed of the risks beforehand and all the care must be taken to prevent and treat POD as early as possible. This will not only help in decreasing the healthcare cost, burden but will also improve the quality of life of elderly patients.

SUMMARY

1. We enrolled a total of 100 elderly (> 60 yrs) patients undergoing noncardiac surgeries under regional anaesthesia after approval from the Institutional Ethics committee.
2. These patients were assessed using both MMSE and DOS scales for delirium preoperatively at the time of pre-anaesthesia checkup one day prior to the surgery, and then postoperatively after shifting the patient to the recovery room (0hr) , 24 and 48 hours after surgery.
3. In our study, the DOS Scale has been found to be more accurate for picking up delirium with Sensitivity of >99.99% and specificity of >88.89%.
4. The incidence of delirium among elderly patients (>60yrs) undergoing noncardiac surgeries under regional anaesthesia came out to be 39% during the study period.
5. Risk of POD was found to be more with increasing age, in bedridden patients, in patients with the history of Cerebrovascular accidents and Obese patients.
6. Alcoholism has been positively associated with POD in our study. The amount of consumption of alcohol also increases the risk of development of POD.
7. Pain intensity was found to be an independent risk factor for delirium.
8. The sex of the patient, various comorbidities such as Diabetes, CKD, Thyroid disease, Hypertension, Cirrhosis, Heart disease came out to be non-significant risk factors in the development of POD in our study.

CONCLUSION

In this randomized observational study, we enrolled a total of 100 elderly (>60 yrs) patients undergoing noncardiac surgeries under regional anaesthesia. They were assessed using both MMSE and DOS scales for delirium preoperatively at the time of pre-anaesthesia checkup one day prior to the surgery, and then postoperatively after shifting the patient to the recovery room (0hr) , 24 and 48 hours after surgery. The incidence of delirium among elderly patients (>60yrs) undergoing noncardiac surgeries under regional anaesthesia came out to be 39% during the study period. In our study, the DOS Scale has been found to be more accurate for picking up delirium with Sensitivity of >99.99% and specificity of >88.89%. Risk of POD was found to be more with increasing age, in bedridden patients, in alcoholism, in patients with a history of cerebrovascular accidents and in obese patients. Pain intensity was found to be an independent risk factor for delirium in our study. Additionally, avoiding identified potential confounding factors as anemia, infection, electrolyte disorders, hormonal disorder, neurological dysfunction, dehydration, renal failure decreases the incidence of POD. Combined, the above measures could help to identify delirious patients and reduce the cost, morbidity, and mortality in elderly patients after surgery.

In the elderly population undergoing various surgical procedures, it is important to screen these patients for POD and detect POD at an early stage. This will not only help in decreasing the healthcare cost, burden but will also improve the quality of life of elderly patients.

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Sr. No.	MRD No	Initials	Date of Admission	Date of Surgery	Weight	Age	Height	Sex	History of Drug Allergy	BMI	Significant History	Comorbidities							
												Diabetes Mellitus	ESRD or CKD	Thyroid disease	Hypertension	Cirrhosis	Any other	Heart Disease	Cancer
1	1013595	Tp	17/04/21	19/04/21	64	87	173	M	NKDA	21.4	BPH	Y	-	-	Y	-	-	Y	-
2	1139912	Ss	19/07/21	20/07/21	94	64	163	M	NKDA	35.4	OA knee	Y	-	-	Y	-	CVA	Y	-
3	931669	JK	21/07/21	22/07/21	72	90	170	M	NKDA	24.9	bladder tum	Y	Y	-	Y	-	-	Y	-
4	1159614	DS	23/08/21	25/08/21	98	64	178	M	NKDA	30.9	cellulitis	Y	-	-	-	-	-	-	-
5	1018355	Sc	26/08/21	27/08/21	86	74	180	M	NKDA	26.5	bladder growth	Y	-	-	Y	-	-	Y	-
6	386689	Mp	06/09/21	06/09/21	95	65	183	M	NKDA	28.4	THR	-	-	-	-	-	-	Y	-
7	1163738	Ls	09/09/21	10/09/21	88	70	175	M	NKDA	28.7	ub growth	Y	-	-	Y	-	-	Y	-
8	978705	BK	21/09/21	22/09/21	72	72	162	F	NKDA	27.4	oa b/l knee	-	-	-	-	-	-	Y	-
9	1176647	BS	21/09/21	21/09/21	107	77	185	M	NKDA	31.3	sinus tract	-	-	-	-	-	obese class 2	-	-
10	334812	Db	22/09/21	22/09/21	36	87	150	F	NKDA	16	domestic fall	-	-	-	-	-	bedridden	-	-
11	1229183	Mv	23/12/21	25/12/21	95	68	180	M	NKDA	29.3	inguinal hernia	Y	-	-	Y	-	-	-	-
12	1235784	RKS	07/01/22	08/01/22	104	65	174	M	NKDA	34.4	inguinal hernia	Y	-	-	-	-	-	Y	-
13	1232589	Md	01/01/22	08/01/22	46	80	152	F	NKDA	19.9	Pressure sore	-	-	-	Y	-	-	-	-
14	1243099	BS	22/01/22	23/01/22	110	65	175	M	NKDA	35.9	PFN	Y	-	-	Y	-	-	Y	-
15	1265901	RC	17/03/22	18/03/22	98	67	170	M	NKDA	33.9	UB Growth	Y	Y	-	Y	-	-	Y	-
16	1137016	HK	25/06/21	02/07/21	66	70	153	F	NKDA	28.2	RSA	-	-	-	Y	-	Stroke	-	-
17	1130800	ML	01/07/21	02/07/21	85	79	160	M	NKDA	33.2	OA Knee	-	-	-	-	-	-	-	-
18	1070123	HSB	04/07/21	05/07/21	52	86	155	M	NKDA	21.6	BPH	-	-	Y	Y	-	Covid mild	-	-
19	1070112	BS	05/07/21	06/07/21	89	67	175	M	NKDA	29.1	PFN	-	-	-	Y	-	-	-	-
20	1132013	RR	04/07/21	05/07/21	80	71	153	F	NKDA	34.2	OA Knee	Y	-	-	Y	-	-	Y	-
21	1132365	Bd	05/07/21	07/07/21	68	77	144	F	NKDA	32.8	Domestic fall	-	-	-	Y	-	-	-	-
22	1132371	PS	05/07/21	07/07/21	90	68	174	M	NKDA	29.7	VAC application	Y	Y	-	-	-	-	-	-
23	1132609	SK	06/07/21	08/07/21	45	75	144	F	NKDA	21.7	PFN	Y	-	-	Y	-	-	-	-
24	1139912	SS	20/07/21	21/07/21	94	64	154	M	NKDA	39.6	OA Knee	Y	-	-	Y	-	CVA	-	-
25	1139839	Rs	03/08/21	05/08/21	82	69	176	M	NKDA	26.5	Fistula in ano	-	-	-	-	Y	-	-	-
26	420264	GS	03/09/21	04/09/21	75	75	155	M	NKDA	31.2	hemmorhoids	Y	-	-	Y	-	-	Y	-
27	381078	BP	22/10/21	23/10/21	88	64	167	M	NKDA	31.6	OA knee	-	-	-	-	-	TB	-	-
28	1197892	CD	26/10/21	27/10/21	46	82	145	F	NKDA	21.9	PFN	-	-	-	-	-	-	-	-
29	1035213	SK	25/10/21	26/10/21	55	87	155	F	NKDA	22.9	PFN	-	-	-	-	-	-	Y	-
30	1195155	BS	05/11/21	06/11/21	70	70	165	M	NKDA	25.7	UB Clot	Y	-	-	Y	-	-	-	-
31	915273	GK	22/11/21	23/11/21	48	71	145	F	NKDA	22.8	UV prolapse	Y	-	-	-	-	-	-	-
32	1163051	GS	25/11/21	26/11/21	65	70	165	M	Multivitamins	23.9	stoma closure	-	-	-	Y	-	-	-	-
33	555882	MM	01/12/21	02/12/21	88	94	175	M	NKDA	28.7	Hemiarthroplasty	-	-	-	Y	-	-	-	-
34	1193765	SK	03/12/21	04/12/21	65	65	168	F	NKDA	23	PFN	Y	-	-	Y	-	-	Y	-
35	1226876	VK	20/12/21	21/12/21	102	70	188	M	NKDA	28.9	UB Clot	-	-	-	Y	-	-	Y	-
36	1240542	RK	06/02/22	07/02/22	58	62	174	M	NKDA	19.2	PFN	Y	-	-	Y	-	CKD	Y	-
37	1014413	TC	24/03/22	24/03/22	70	63	155	M	NKDA	29.1	TURBT	-	-	-	-	-	-	Y	-
38	1260749	JS	28/03/22	28/03/22	76	65	178	M	NKDA	24	TURBT	-	-	-	Y	-	-	-	-
39	151341	GS	28/03/22	30/03/22	85	72	188	M	NKDA	24	UB Clot	-	-	-	Y	-	-	-	-
40	1260273	SJ	30/03/22	31/03/22	78	74	156	F	NKDA	32.1	ureterolith	-	-	Y	Y	-	-	-	-
41	937649	MS	04/04/22	05/04/22	100	67	175	M	NKDA	32.7	#NOF	Y	-	-	-	-	-	-	-
42	1230346	JR	18/04/22	19/04/22	65	65	180	M	NKDA	20.1	I&D	-	-	-	-	-	TB	-	-
43	1288919	GK	18/04/22	18/04/22	55	70	168	F	NKDA	19.5	PFN	-	-	-	-	-	-	-	-
44	1288947	KG	17/04/22	18/04/22	62	82	167	M	NKDA	22.2	Hemiarthroplasty	-	-	-	Y	-	-	Y	-
45	1290633	P	21/04/22	22/04/22	72	74	165	F	NKDA	26.4	Diabetic foot	Y	-	-	Y	-	-	Y	-
46	1285897	KB	25/04/22	26/04/22	70	76	156	F	NKDA	28.8	OA knee	Y	-	-	Y	-	-	-	-
47	1293060	RK	25/04/22	26/04/22	75	69	175	M	NKDA	24.5	OA Knee	Y	-	-	-	-	-	Y	-
48	1269699	VS	09/05/22	10/05/22	85	82	164	M	NKDA	31.6	DJ stenting	Y	-	-	Y	-	-	-	-
49	130726	SS	19/05/22	20/05/22	95	73	167	M	NKDA	34.1	Lt foot I&D	-	-	-	Y	-	-	Y	-
50	1300238	DS	18/05/22	19/05/22	67	74	178	M	NKDA	21.1	Diabetic foot	Y	-	-	Y	-	-	Y	-
51	1238089	VP	24/01/22	24/01/22	81	82	176	M	NKDA	26.1	BKA	Y	-	-	-	-	COPD	-	-
52	1310366	CK	24/05/22	25/05/22	70	70	165	F	NKDA	25.7	OA Knee	Y	-	-	Y	-	-	-	-
53	250519	S	05/02/21	06/02/21	76	82	175	M	NKDA	24.8	PFN	Y	-	-	Y	-	-	-	-
54	591665	M	05/02/21	06/02/21	87	90	186	M	NKDA	25.1	Hemiarthroplasty	-	-	-	-	-	-	Y	-

Sr. No.	MRD No	Smoking History (No. of packs per day)	Alcoholic History (No.of drinks per day)	Investigations												Preoperative Assessment				
				Hb	S.Urea	S.Chloride	TLC	S.Creatinine	S.Calcium	Hematocrit	S.Sodium	RBS	PLT	S.Potassium	S.TSH (If h/o Thyroid disease)	SBP (mmHg)	DBP	SpO2	DOS Score	MMSE Score
1	1013595	-	-	9.2	52	102	11.2	0.8	-	-	131	192	216	3.5	-	140	90	98%	2	28
2	1139912	-	-	13.5	17	102	11.4	1.5	-	-	134	124	299	3.9	-	130	80	99%	2	29
3	931669	-	-	8.7	48	90	7.1	3.18	-	-	129	217	203	3.5	-	130	70	99%	3	24
4	1159614	-	-	8.2	52	98	23.1	1.3	-	-	128	223	193	4.2	-	100	70	98%	4	24
5	1018355	-	-	11.2	44	102	8.4	1.2	-	-	138	148	199	3.9	-	140	80	99%	2	27
6	386689	-	-	12.5	41	104	8.5	0.93	-	-	138	104	155	4.62	-	140	70	100%	3	29
7	1163738	-	-	13.2	36	92	8.2	1.2	-	-	132	146	342	3.8	-	130	80	100%	4	24
8	978705	-	-	12.3	29	104	8.7	0.63	-	-	144	108	224	4.26	-	140	86	99%	2	28
9	1176647	-	3	14.8	23	100	6.8	0.8	-	-	141	100	158	4.6	-	120	70	100%	2	29
10	334812	-	-	11.5	34	105	9	0.48	-	-	130	121	332	4.4	-	130	72	98%	5	25
11	1229183	-	2	11.2	32	102	8.2	0.9	-	-	137	156	226	4.1	-	140	90	100%	2	27
12	1235784	4	2	14.7	24	98	10.4	1.1	-	-	133	190	216	3.9	-	136	94	100%	0	28
13	1232589	-	-	9.2	36	100	24	1.2	-	-	134	121	224	3.3	-	140	96	100%	4	27
14	1243099	-	3	10.3	47	105	11.4	0.7	-	-	138	250	152	4.5	-	154	110	100%	2	29
15	1265901	-	2	12.5	50	100	8.2	4.4	-	-	139	92	226	4.9	-	180	110	100%	2	28
16	1137016	-	-	11.8	19	101	5.3	0.5	-	-	142	112	176	3.66	-	130	70	100%	1	28
17	1130800	-	-	13.5	25	100	14	1.1	-	-	140	185	220	4.2	-	142	94	100%	1	29
18	1070123	-	-	11.5	37	102	5.8	0.98	-	-	136	112	132	3.68	4.33	130	74	100%	2	27
19	1070112	-	3	10.5	32	102	5.2	1.3	-	-	143	189	223	3.12	-	142	78	100%	1	28
20	1132013	-	-	11.1	34	99	7.5	0.7	-	-	139	142	112	4.2	-	138	78	100%	1	28
21	1132365	-	-	12.4	33	101	13.3	0.6	-	-	131	162	144	4.2	-	157	99	100%	2	28
22	1132371	-	-	12.3	75	105	7.2	1.11	-	-	140	117	130	4.6	-	123	84	100%	1	28
23	1132609	-	-	8.7	34	102	5.6	1.02	-	-	133	114	239	3.5	-	121	94	100%	2	27
24	1139912	-	4	13.5	17	108	6.7	1.5	-	-	136	144	299	3.8	-	124	103	100%	1	26
25	1139839	-	3	9.2	56	99	7.9	1.1	-	-	129	188	95	3.5	-	125	80	100%	2	28
26	420264	-	2	12.9	24	101	11.5	1.01	-	-	134	133	301	4.2	-	148	100	100%	1	29
27	381078	2	2	11.2	35	102	9.7	1.02	-	-	144	144	208	3.8	-	140	90	100%	1	28
28	1197892	-	-	8.2	21	99	9.8	0.87	-	-	129	112	310	3.2	-	110	81	100%	3	26
29	1035213	-	-	9.4	67	101	5.6	1.08	-	-	133	142	333	3.7	-	130	106	100%	2	28
30	1195155	1	2	9.2	11	102	7.8	1.09	-	-	145	88	122	3.4	-	138	108	100%	1	29
31	915273	-	-	11.9	39	97	7.4	0.67	-	-	128	88	305	4.8	-	124	84	100%	1	28
32	1163051	-	3	9	81	101	9.7	1.59	-	-	130	76	239	4.8	-	140	92	100%	2	29
33	555882	-	2	11.9	44	94	8.7	0.68	-	-	128	109	347	4.5	-	140	100	100%	1	28
34	1193765	-	-	9.2	42	102	7.1	0.82	-	-	138	212	420	4.63	-	150	87	100%	3	27
35	1226876	-	4	11.3	33	98	5.6	0.9	-	-	135	114	236	3.8	-	148	113	100%	1	29
36	1240542	-	3	10.8	69	101	7.7	1.8	-	-	133	124	308	3.4	-	150	106	100%	2	28
37	1014413	2	2	11.6	22	98	11.7	0.8	-	-	134	122	288	2.9	-	154	127	100%	1	28
38	1260749	1	2	14.2	22	98	6.7	1.1	-	-	134	125	432	3.4	-	150	122	100%	1	29
39	151341	-	2	10.2	23	101	10	1.34	-	-	133	167	345	3.8	-	158	100	100%	2	28
40	1260273	-	-	10.2	14	101	5.8	1.01	-	-	139	134	223	3.9	3.9	148	93	100%	1	28
41	937649	1	2	9.2	25	93	7.3	0.9	-	-	123	198	239	5.17	-	160	122	100%	2	27
42	1230346	4	-	11.8	30	96	11.1	0.69	-	-	135	98	356	4.43	-	150	93	100%	1	28
43	1288919	-	-	10.4	23	101	8.2	0.7	-	-	133	124	234	3.9	-	140	96	100%	1	29
44	1288947	-	-	10	67	105	12	1.28	-	-	135	176	209	4.6	-	164	112	100%	2	28
45	1290633	-	-	9.2	45	98	14.2	1.2	-	-	134	212	222	3.9	-	156	135	100%	2	27
46	1285897	-	-	12	30	101	5.7	0.9	-	-	138	123	211	3.9	-	160	136	100%	1	28
47	1293060	-	4	11.3	34	102	7.2	0.8	-	-	134	144	234	3.7	-	165	117	100%	2	27
48	1269699	-	2	11	45	101	5.8	1.1	-	-	135	145	246	3.9	-	140	90	100%	1	29
49	130726	-	4	10.2	35	94	7.2	0.8	-	-	139	187	198	4.2	-	130	103	100%	1	28
50	1300238	-	4	9.4	45	92	9.8	0.9	-	-	142	212	222	4.2	-	142	101	100%	2	28
51	1238089	2	3	10.2	23	98	7.9	1.1	-	-	142	154	322	3.5	-	150	78	100%	3	27
52	1310366	-	-	11.4	23	93	9.2	1.08	-	-	139	117	234	3.7	-	148	123	100%	2	29
53	250519	-	4	9.2	34	92	6.7	0.9	-	-	136	118	143	4.2	-	150	104	100%	1	29
54	591665	-	2	10.2	48	96	7.8	1.2	-	-	139	94	235	3.9	-	130	92	100%	2	28

Sr. No.	MRD No	RR	HR	Premedication (if any)	Intraoperative Assessment											
					Type and Duration of Surgery	Type of Anaesthesia	Sedative Drugs used (if any)	Analgesic(s) used intraoperatively	Volume of Fluids transfused	Volume of Blood transfused	Volume of Blood loss	Episodes of Hypotension (1 or > 1)	Episodes of Hypoxemia (SpO2 <90%) (1 or > 1)	0hr	4hr	8hr
1	1013595	18	68	-	uro/40min	SAB	Midaz 1mg	-	200ml	-	20ml	1	0	140/90	130/70	150/90
2	1139912	16	76	-	ortho/90mins	CSE	-	inf ropin	1500ml	-	300ml	1	0	142/86	142/88	156/74
3	931669	20	76	-	uro/30min	SAB	-	-	200ml	-	30ml	0	0	130/82	145/86	180/92
4	1159614	18	110	-	gensurg/2hrs	popliteal block	-	-	1000ml	350ml	300ml	3	0	100/70	110/70	117/90
5	1018355	16	98	-	uro/30min	SAB+obturator block	-	-	300ml	-	40ml	1	0	100/70	142/88	142/90
6	386689	18	74	-	ortho/120mins	CSE	Fenta50mcg	-	3000ml	-	400ml	2	0	90/60	99/67	110/70
7	1163738	15	96	-	uro/60min	SAB+obturator block	midaz1mg	-	100ml	-	50ml	2	0	110/60	130/70	136/86
8	978705	18	78	-	ortho/3hrs	CSE	fenta50mcg	-	2500ml	-	500ml	1	0	130/70	130/80	132/87
9	1176647	20	86	-	ortho/90mins	SAB	-	-	1000ml	-	200ml	1	0	130/80	134/72	134/78
10	334812	14	74	-	ortho/60min	SAB	-	-	1000ml	-	300ml	1	0	142/78	134/76	122/80
11	1229183	16	78	-	gen surg/120 mins	SAB	-	-	2000ml	-	200ml	1	0	130/70	140/80	136/64
12	1235784	15	86	-	gen surg/120 mins	SAB	midaz1mg	-	1000ml	-	100ml	1	0	110/76	142/76	145/87
13	1232589	14	102	-	plastic surg/45mins	SAB	-	-	1500ml	-	150ml	0	0	130/80	134/72	132/82
14	1243099	13	83	-	Orthopaedics/60mins	SAB	-	-	1500ml	-	200ml	0	0	140/73	140/80	136/64
15	1265901	14	88	-	Uro/20mins	SAB	-	-	200ml	-	20ml	0	0	150/110	155/120	142/105
16	1137016	14	82	-	orthopaedics/60mins	SAB	-	fentanyl 25mcg	1500ml	-	200ml	1	0	130/80	140/90	138/98
17	1130800	15	84	-	Orthopaedics/90mins	SAB	-	-	1500ml	-	200ml	1	0	140/90	145/98	142/96
18	1070123	14	88	-	uro/45mins	SAB	midaz 1mg	-	200ml	-	200ml	1	0	130/90	134/84	142/88
19	1070112	13	78	-	ortho/60mins	SAB	-	-	1500ml	-	200ml	1	0	150/111	155/121	142/106
20	1132013	15	88	-	ortho/90mins	CSE	-	-	1500ml	-	350ml	1	0	130/81	140/91	138/99
21	1132365	18	65	-	ortho/60mins	SAB	midaz1mg	fentanyl 20mcg	1300ml	-	200ml	0	0	142/88	150/85	146/82
22	1132371	17	94	-	ortho/45mins	SAB	-	pcm1g	1000ml	-	150ml	1	0	150/92	152/88	160/90
23	1132609	16	64	-	ortho/60mins	SAB	midaz1mg	-	1200ml	350ml	200ml	1	0	145/80	148/84	130/90
24	1139912	12	89	-	ortho/90mins	CSE	-	-	2000ml	-	300ml	1	0	160/90	155/78	170/98
25	1139839	12	83	-	gen surg/30mins	SAB	-	fentanyl 20mcg	1500ml	-	100ml	0	0	142/89	150/86	146/83
26	420264	18	99	-	gen surg/30mins	SAB	-	-	1000ml	-	150ml	1	0	150/93	152/89	160/91
27	381078	12	108	-	ortho/90mins	CSE	midaz1mg	-	1800ml	-	200ml	1	0	145/81	148/85	130/91
28	1197892	17	108	-	ortho/60mins	SAB	-	-	1200ml	350ml	300ml	1	0	160/91	155/79	170/99
29	1035213	12	102	-	ortho/50mins	SAB	-	-	1200ml	-	200ml	0	0	142/90	150/87	146/84
30	1195155	13	102	-	uro/20mins	SAB	-	-	500ml	-	50ml	1	0	150/94	152/90	160/92
31	915273	14	109	-	gynae/90mins	CSE	-	-	1800ml	-	200ml	1	0	145/82	148/86	130/92
32	1163051	13	97	-	gensurg/90mins	SAB	-	-	1500ml	-	200ml	1	0	160/92	155/80	170/100
33	555882	17	109	-	ortho/90mins	SAB	midaz 1mg	fentanyl 20mcg	1800ml	-	350ml	1	0	142/91	150/88	146/85
34	1193765	13	101	-	ortho/60mins	SAB	midaz2mg	-	1400ml	-	200ml	1	0	150/95	152/91	160/93
35	1226876	15	97	-	uro/20mins	SAB	midaz1mg	-	700ml	-	50ml	1	0	145/83	148/87	130/93
36	1240542	15	86	-	ortho/60mins	SAB	-	-	1500ml	-	200ml	1	0	160/93	155/81	170/101
37	1014413	12	98	-	uro/45mins	SAB	midaz1mg	-	200ml	-	100ml	1	0	142/92	150/89	146/86
38	1260749	16	67	-	uro/60min	SAB	midaz1mg	-	200ml	-	200ml	1	0	150/96	152/92	160/94
39	151341	15	106	-	uro/30mins	SAB	midaz1mg	-	300ml	-	75ml	1	0	145/84	148/88	130/94
40	1260273	15	91	-	uro/45mins	SAB	-	-	900ml	-	50ml	0	0	160/94	155/82	170/102
41	937649	17	74	-	ortho/75mins	SAB	-	-	1500ml	-	200ml	1	0	142/93	150/90	146/87
42	1230346	18	105	-	gensurg/45mins	SAB	-	-	1200ml	-	200ml	1	0	150/97	152/93	160/95
43	1288919	17	81	-	ortho/60mins	SAB	-	-	1500ml	-	200ml	1	0	145/85	148/89	130/95
44	1288947	13	78	-	ortho/90mins	SAB	midaz1mg	-	1100ml	-	200ml	1	0	160/95	155/83	170/103
45	1290633	14	95	-	gen surg/60mins	SAB	-	-	1400ml	-	200ml	1	0	142/94	150/91	146/88
46	1285897	17	106	-	ortho/90mins	CSE	-	-	1600ml	-	350ml	1	0	150/98	152/94	160/96
47	1293060	15	85	-	ortho/90mins	CSE	-	-	1500ml	-	300ml	0	0	145/86	148/90	130/96
48	1269699	14	80	-	uro/30mins	SAB	midaz1mg	-	1000ml	-	50ml	1	0	160/96	155/84	170/104
49	130726	17	68	-	gen surg/70mins	SAB	midaz 1mg	-	1300ml	-	200ml	0	0	142/95	150/92	146/89
50	1300238	18	102	-	gen surg/60mins	SAB	midaz1mg	-	1500ml	-	200ml	0	0	150/99	152/95	160/97
51	1238089	17	65	-	gen surg/90mins	SAB	-	-	1500ml	-	200ml	1	0	145/87	148/91	130/97
52	1310366	18	80	-	ortho/90mins	CSE	-	-	1500ml	-	350ml	0	0	160/97	155/85	170/105
53	250519	16	93	-	ortho/60mins	SAB	midaz 1mg	-	1200ml	-	200ml	1	0	142/96	150/93	146/90
54	591665	13	77	-	ortho/60mins	SAB	-	-	1500ml	-	200ml	0	0	150/100	152/96	160/98

Sr. No.	MRD No	SBP/DBP										HR												SpO2							
		12hr	16hr	20hr	24hr	28hr	32hr	36hr	40hr	44hr	48hr	0hr	4hr	8hr	12hr	16hr	20hr	24hr	28hr	32hr	36hr	40hr	44hr	48hr	0hr	4hr	8hr	12hr	16hr	20hr	24hr	28hr
1	1013595	120/70	120/70	130/80	130/70	130/70	130/80	130/70	120/70	130/80	130/80	68	62	63	66	68	68	70	64	66	72	68	64	66	98%	99%	100%	100%	100%	100%	100%	100%
2	1139912	138/46	140/80	140/72	140/98	130/76	140/88	150/78	130/80	130/86	140/76	88	86	65	94	98	88	82	84	88	86	88	84	78	98	99	100	99	99	100	98	99
3	931669	180/96	170/96	150/78	170/80	150/90	170/98	150/88	156/86	160/78	148/52	98	96	97	98	94	88	92	94	98	96	99	89	88	98	99	99	99	99	99	99	99
4	1159614	132/98	143/97	112/76	118/72	110/68	118/64	145/87	148/96	136/98	124/76	110	119	114	116	110	102	106	108	107	106	110	117	118	100	100	100	98	99	98	98	99
5	1018355	132/96	142/86	146/86	142/98	130/98	134/74	138/96	142/86	140/84	156/98	104	98	84	88	86	88	90	92	94	98	92	94	98	99	100	100	99	98	97	98	98
6	386689	130/82	128/46	128/88	142/88	130/70	120/72	126/74	132/76	134/78	124/46	68	78	72	74	78	78	80	84	88	82	70	72	74	100	100	100	100	100	100	99	98
7	1163738	134/76	135/89	138/88	122/76	124/78	134/88	124/88	124/68	133/68	140/84	96	104	106	106	108	112	110	112	110	114	112	102	110	98	100	100	100	99	99	100	98
8	978705	140/72	142/78	146/78	124/66	122/45	128/68	134/88	145/88	134/64	130/85	86	88	86	90	86	88	58	88	100	98	90	66	68	100	100	100	100	99	99	98	99
9	1176647	136/76	124/88	122/86	122/76	132/86	118/67	134/88	112/88	114/67	129/45	86	88	84	90	85	76	75	75	76	78	95	78	66	100	98	98	97	96	98	99	100
10	334812	129/96	102/70	98/72	100/60	110/72	112/82	114/88	138/98	134/72	142/88	96	110	112	98	95	98	114	110	112	97	98	96	98	100	100	98	99	100	99	99	100
11	1229183	138/72	142/76	146/78	134/78	138/68	128/98	142/82	138/68	140/82	132/89	97	87	88	90	88	86	88	95	88	78	75	82	88	100	100	100	100	100	99	98	100
12	1235784	138/62	135/76	142/78	134/97	128/78	132/76	134/82	136/54	138/86	132/82	67	68	88	92	86	75	74	86	82	84	82	76	78	100	100	100	99	97	100	98	100
13	1232589	142/76	135/54	122/78	124/78	114/68	115/76	114/88	122/78	134/86	122/86	104	105	109	110	108	106	105	101	99	98	97	95	94	99	100	100	99	99	98	100	98
14	1243099	138/72	143/79	146/78	134/78	139/82	128/98	122/79	138/68	140/82	132/89	97	87	88	90	88	86	88	95	88	78	75	82	88	100	100	100	100	100	99	98	100
15	1265901	140/103	160/115	165/118	160/116	165/119	160/117	165/120	160/118	165/121	160/116	84	86	88	82	80	80	82	86	88	88	86	84	82	100	99	100	98	99	100	99	99
16	1137016	148/95	140/91	138/99	148/96	140/92	138/100	148/97	140/93	138/101	148/98	88	86	84	82	80	78	76	74	72	70	68	66	64	100	100	100	100	100	100	100	100
17	1130800	150/102	140/91	145/99	142/97	150/103	140/92	145/100	142/98	150/104	140/93	88	86	90	88	86	84	92	88	86	82	80	84	88	100	99	98	100	100	99	100	100
18	1070123	130/91	134/85	142/89	130/92	134/86	142/90	130/93	134/87	142/91	130/94	88	86	94	98	95	100	86	88	92	98	88	86	88	100	100	100	100	100	100	100	100
19	1070112	140/104	160/116	165/119	160/117	165/120	160/118	165/121	160/119	165/122	160/117	71	73	72	79	108	103	93	70	111	98	94	91	110	95	98	97	95	98	98	99	95
20	1132013	148/96	140/91	138/100	148/97	140/93	138/101	148/98	140/94	138/102	148/99	74	69	105	70	81	68	88	80	91	92	80	69	117	98	96	99	95	100	96	98	95
21	1132365	155/90	142/89	150/86	146/83	155/91	142/89	150/86	146/83	155/91	142/90	94	93	91	93	110	103	110	95	93	76	109	120	62	95	99	100	96	96	96	95	100
22	1132371	165/92	150/93	152/89	160/91	165/93	150/94	152/90	160/92	165/94	150/95	111	97	97	81	88	71	86	81	80	79	91	95	81	96	97	97	100	97	95	100	98
23	1132609	145/81	148/85	130/91	145/82	148/86	130/92	145/83	148/87	130/93	145/84	89	83	114	129	72	74	119	111	81	88	94	76	104	95	95	96	95	98	99	95	96
24	1139912	160/91	155/79	170/99	160/92	155/80	170/100	160/93	155/81	170/101	160/94	111	117	110	110	94	89	110	118	70	76	105	120	89	96	99	95	100	99	99	95	96
25	1139839	155/91	142/90	150/87	146/84	155/92	142/90	150/87	146/84	155/92	142/91	93	83	75	69	89	99	77	92	97	111	107	124	90	98	95	99	95	96	100	95	100
26	420264	165/93	150/94	152/90	160/92	165/94	150/95	152/91	160/93	165/95	150/96	67	77	78	72	87	74	92	111	75	66	76	61	68	96	100	98	97	97	95	99	98
27	381078	145/82	148/86	130/92	145/83	148/87	130/93	145/84	148/88	130/94	145/85	70	63	72	56	74	79	86	83	61	65	66	55	115	95	96	95	100	97	99	95	97
28	1197892	160/92	155/80	170/100	160/93	155/81	170/101	160/94	155/82	170/102	160/95	65	55	85	69	87	80	117	101	64	83	98	79	101	100	97	99	99	97	97	99	97
29	1035213	155/92	142/91	150/88	146/85	155/93	142/91	150/88	146/85	155/93	142/92	71	59	107	119	84	70	105	87	109	89	105	122	106	97	95	100	95	95	97	98	98
30	1195155	165/94	150/95	152/91	160/93	165/95	150/96	152/92	160/94	165/96	150/97	81	74	107	90	83	66	108	107	91	94	66	49	92	97	98	96	98	99	99	100	100
31	915273	145/83	148/87	130/93	145/84	148/88	130/94	145/85	148/89	130/95	145/86	64	55	60	54	115	99	61	52	60	41	103	97	112	99	95	99	99	99	96	100	100
32	1163051	160/93	155/81	170/101	160/94	155/82	170/102	160/95	155/83	170/103	160/96	65	57	118	135	92	94	82	65	103	112	67	87	60	98	99	97	98	99	95	100	97
33	555882	155/93	142/92	150/89	146/86	155/94	142/92	150/89	146/86	155/94	142/93	105	106	109	128	107	122	114	132	79	95	82	71	68	98	99	97	95	99	97	100	97
34	1193765	165/95	150/96	152/92	160/94	165/96	150/97	152/93	160/95	165/97	150/98	104	91	118	98	71	60	107	94	87	78	77	96	96	95	96	95	97	100	96	96	96
35	1226876	145/84	148/88	130/94	145/85	148/89	130/95	145/86	148/90	130/96	145/87	60	70	107	117	109	94	82	80	120	139	87	87	81	99	97	95	96	98	98	95	98
36	1240542	160/94	155/82	170/102	160/95	155/83	170/103	160/96	155/84	170/104	160/97	108	108	114	121	118	134	80	92	63	83	81	99	77	97	97	98	96	98	96	98	99
37	1014413	155/94	142/93	150/90	146/87	155/95	142/93	150/90	146/87	155/95	142/94	94	89	101	113	90	81	119	112	88	70	81	91	68	95	96	97	99	99	98	96	100
38	1260749	165/96	150/97	152/93	160/95	165/97	150/98	152/94	160/96	165/98	150/99	116	121	82	102	119	139	63	51	75	66	67	51	110	100	97	96	95	95	98	96	95
39	151341	145/85	148/89	130/95	145/86	148/90	130/96	145/87	148/91	130/97	145/88	108	112	95	106	108	102	103	109	64	75	85	83	92	100	97	98	98	99	100	97	98
40	1260273	160/95	155/83	170/103	160/96	155/84	170/104	160/97	155/85	170/105	160/98	77	85	99	80	111	109	114	120	62	54	73	58	120	97	96	98	95	97	100	96	96
41	937649	155/95	142/94	150/91	146/88	155/96	142/94	150/91	146/88	155/96	142/95	114	132	88	75	91	84	89	75	95	107	99	90	114	99	99	99	100	96	99	98	97
42	1230346	165/97	150/98	152/94	160/96	165/98	150/99	152/95	160/97	165/99	150/100	74	82	86	66	107	126	61	64	107	94	74	74	95	96	100	99	100	99	97	96	100
43	1288919	145/86	148/90	130/96	145/87	148/91	130/97	145/88	148/92	130/98	145/89	89	78	104	108	94	75	70	70	60	44	96	100	69	96	98	97	99	100	97	96	97
44	1288947	160/96	155/84	170/104	160/97	155/85	170/105	160/98	155/86	170/106	160/99	99	98	67	48	69	60	112	98	89	70	75	75	85	99	100	100	96	100	95	100	100
45	1290633	155/96	142/95	150/92	146/89	155/97	142/95	150/92	146/89	155/97	142/96	70	83	94	109	84	82	98	104	95	76	90	93	64	95	98	95	96	99	100	96	96
46	1285897	165/98	150/99	152/95	160/97	165/99	150/100	152/96	160/98	165/100	150/101	103	87	65	46	61	50	120	139	66	65	60	74	95	96	97	99	100	100	97	95	100
47	1293060	145/87	148/91	130/97	145/88	148/92	130/98	145/89	148/93	130/99	145/90	78	73	78	77	116	112	99	92	106	86	102	91	93	100	95	100	96	96	99	96	99
48	1269699	160/97	155/85	170/105	160/98	155/86	170/106	160/99	155/87	170/107	160/100	106	100	69	88	76	72	115	122	118	122	79	83	120	95	99	100	100	100	95	98	97
49	130726	155/97	142/96	150/93	146/90	155/98	142/96	150/93	146/90	155/98	142/97	87	95	64	80	83	76	64	51	71	53	106	124	112	100	97	97	100	96	97	97	96
50	1300238	165/99	150/100	152/96	160/98	165/100	150/101	152/97	160/99	165/101	150/102	81	71	111	119	73	62	100	106	114	125	91	89	74	95	95	97	97	96	99	95	98
51	1238089	145/88	148/92	130/98	145/89	148/93	130/99	145/90	148/94	130/100	145/91	91	91	72	66	100	112	103	105	81	76	78	63	82	100	97	99	97	96	95	97	99
52	1310366	160/98	155/86	170/106	160/99	155/87	170/107	160/100	155/88	170/108	160/101	108	111	72	88	74	83	95	80	69	58	96	114	87	95	96	98	95	95	100	95	100
53	250519	155/98	142/97	150/94	146/91	155/99	142/97	150/94	146/91	155/99	142/98	104	91	82	71	83	63	91	109	117	101	79	99	86	99	99	96	99	99	98	96	99
54	591665	165/100	150/101	152/97	160/99	165/101	150/102	152/98	160/100	165/102	150/103	105	115	61	58	95	95	82	66	82	101	106	103	93	97	99	97	98	96	96	98	99

Sr. No.	MRD No	Vitals					Pain Score (CNPI)													Postoperative Assessment						Ar
		32hr	36hr	40hr	44hr	48hr	0hr	4hr	8hr	12hr	16hr	20hr	24hr	28hr	32hr	36hr	40hr	44hr	48hr	0hr	4hr	8hr	12hr	16hr	20hr	
1	1013595	100%	98%	98%	98%	98%	0	0	3	0	3	1	0	0	1	0	1	0	0	-	-	pcm1g	-	pcm1g	-	
2	1139912	98	99	98	98	99	1	1	2	1	1	0	1	1	0	0	0	0	1	inf ropin0.2%@6ml/hr	-	-	-	-	-	
3	931669	99	98	99	99	99	1	4	4	4	4	4	4	2	2	2	3	2	1	-	pcm1g	-	pcm1g	-	pcm1g	
4	1159614	98	99	98	98	98	0	0	0	0	2	4	4	4	2	3	2	3	2	-	-	pcm1g	-	pcm1g	-	
5	1018355	98	96	97	98	98	1	1	1	1	0	1	1	1	2	2	2	2	2	-	-	-	-	pcm1g	-	
6	386689	99	100	98	97	98	0	4	2	2	2	3	3	3	3	3	2	3	2	inf ropin 0.2%@8ml/hr	-	-	-	-	tramadol 50mg	
7	1163738	99	98	98	97	99	0	4	5	4	5	5	5	4	4	3	3	3	2	pcm1g	-	tramadol50mg	-	pcm1g	-	
8	978705	100	100	100	99	99	0	1	1	1	3	2	1	1	1	1	2	2	2	inf ropin 0.2%@8ml/hr	-	-	-	pcm1g	-	
9	1176647	98	98	100	100	100	0	2	2	4	2	2	2	2	2	1	3	2	2	-	pcm1g	-	voveron75mg	-	pcm1g	
10	334812	99	100	100	99	100	2	5	6	7	6	4	3	3	3	2	1	2	1	-	pcm1g	voveron 75mg	-	pcm1g	-	
11	1229183	100	99	98	100	100	0	1	2	2	2	2	1	2	1	1	1	1	1	-	pcm1g	-	pcm1g	voveron 75mg	-	
12	1235784	98	99	98	100	100	0	1	1	1	2	2	2	1	1	1	1	1	2	-	-	pcm1g	-	pcm1g	-	
13	1232589	100	100	100	100	100	0	2	2	4	5	4	4	6	4	4	2	3	3	-	pcm1g	-	tramadol50mg	-	pcm1g	
14	1243099	100	99	98	100	100	0	1	1	2	1	1	2	1	1	3	1	1	1	-	-	-	pcm1g	-	-	
15	1265901	98	98	100	100	100	0	1	1	1	1	1	2	1	1	1	1	1	1	-	pcm1g	-	-	pcm1g	-	
16	1137016	100	100	100	100	100	0	0	2	2	2	4	1	1	1	1	1	1	2	-	pcm1g	-	tramadol 50mg	pcm1g	-	
17	1130800	99	100	99	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	inf/ropin	inf/ropin	inf/ropin	inf/ropin	inf/ropin	inf/ropin	
18	1070123	100	100	100	100	100	0	0	0	2	2	2	1	1	1	0	0	1	0	-	pcm1g	-	pcm1g	-	pcm1g	
19	1070112	98	98	96	97	99	0	5	0	1	4	1	3	0	3	5	1	4	3	-	tramadol50mg	pcm1g	pcm1g	-	pcm1g	
20	1132013	98	97	100	99	97	0	3	4	4	4	1	3	5	2	2	0	0	3	inf ropin	-	inf ropin	-	pcm1g	-	
21	1132365	96	97	98	97	95	0	5	1	3	2	1	4	3	2	5	1	3	4	-	pcm1g	-	pcm1g	-	pcm1g	
22	1132371	97	98	95	98	96	0	1	2	1	2	2	5	5	1	4	1	2	2	-	-	-	pcm1g	-	pcm1g	
23	1132609	98	99	95	96	95	0	4	1	0	4	3	1	2	1	0	2	2	3	-	tramadol50mg	-	-	pcm1g	-	
24	1139912	100	96	100	98	99	0	2	3	5	5	1	5	3	0	2	2	3	3	inf ropin	-	-	inf ropin	-	-	
25	1139839	97	100	99	100	97	0	4	0	2	4	3	4	0	3	1	2	0	0	-	-	-	pcm1g	-	pcm1g	
26	420264	95	100	97	95	99	0	1	0	5	0	1	1	2	4	5	0	1	0	-	pcm1g	-	tramadol50mg	-	pcm1g	
27	381078	96	98	100	98	100	0	0	4	0	5	4	5	2	5	1	5	1	3	inf ropin	-	tramadol50mg	-	tramadol50mg	-	
28	1197892	95	95	96	97	100	0	5	2	4	1	0	2	2	5	1	4	1	2	-	pcm1g	-	-	-	pcm1g	
29	1035213	96	98	100	96	98	0	3	2	2	0	2	2	5	5	1	2	3	2	pcm1g	-	-	-	pcm1g	-	
30	1195155	98	100	99	95	96	0	4	0	5	0	1	5	4	5	4	0	4	0	-	-	-	-	-	pcm1g	
31	915273	95	95	98	95	96	0	4	2	5	3	3	2	3	5	0	5	5	3	inf ropin	-	-	tramadol50mg	-	pcm1g	
32	1163051	98	97	96	98	96	0	4	3	0	3	1	3	3	2	2	1	1	3	-	tramadol50mg	-	-	pcm1g	-	
33	555882	98	97	99	95	99	0	2	5	5	0	2	3	3	3	3	1	0	2	-	pcm1g	-	tramadol50mg	-	pcm1g	
34	1193765	98	99	99	98	98	0	1	2	5	5	5	4	3	1	0	1	1	1	-	pcm1g	-	tramadol50mg	-	-	
35	1226876	96	96	97	100	96	0	3	2	5	3	2	2	4	4	1	0	5	1	-	pcm1g	-	tramadol50mg	-	pcm1g	
36	1240542	99	100	95	95	97	0	1	1	2	2	5	3	3	5	0	2	5	5	-	pcm1g	-	pcm1g	-	-	
37	1014413	95	96	95	100	97	0	2	2	1	5	5	2	4	0	4	1	3	3	-	Pcm1g	-	pcm1g	-	-	
38	1260749	95	98	97	95	99	0	4	3	1	0	2	2	1	5	0	5	5	2	-	tramadol50mg	-	pcm1g	-	-	
39	151341	97	98	99	99	96	0	4	1	3	2	4	5	3	0	0	4	2	2	-	-	pcm1g	-	-	-	
40	1260273	100	97	97	99	99	0	1	3	3	0	2	1	4	2	5	3	2	1	-	pcm1g	-	-	-	pcm1g	
41	937649	96	98	100	99	97	0	2	2	3	5	0	4	2	2	1	2	2	3	-	pcm1g	-	-	tramadol50mg	-	
42	1230346	96	96	96	100	98	0	5	1	1	2	1	3	3	0	3	3	0	4	-	-	pcm1g	-	pcm1g	-	
43	1288919	96	100	97	96	96	0	0	5	3	3	5	4	5	0	5	2	0	1	-	pcm1g	-	-	-	pcm1g	
44	1288947	96	100	100	100	96	0	5	0	5	5	4	0	5	5	3	1	3	0	-	tramadol50mg	-	tramadol50mg	-	tramadol50mg	
45	1290633	99	96	99	97	98	0	4	0	1	1	5	1	0	1	4	0	0	5	-	-	pcm1g	-	pcm1g	-	
46	1285897	99	100	96	99	95	0	3	0	3	3	1	4	0	2	1	1	0	2	-	pcm1g	-	pcm1g	-	pcm1g	
47	1293060	96	96	99	98	95	0	0	0	1	0	4	0	0	1	4	2	4	2	-	pcm1g	-	pcm1g	-	tramadol50mg	
48	1269699	99	97	100	96	100	0	1	0	0	0	2	3	3	1	2	0	4	5	-	pcm1g	-	pcm1g	-	-	
49	130726	98	98	97	96	99	0	5	2	3	5	0	4	2	3	5	1	3	3	-	tramadol50mg	-	-	tramadol50mg	-	
50	1300238	95	96	99	99	96	0	2	5	1	5	3	5	1	4	0	2	0	4	-	pcm1g	-	pcm1g	-	pcm1g	
51	1238089	98	100	98	97	100	0	2	5	3	1	5	4	0	1	1	3	5	3	-	pcm1g	-	pcm1g	-	tramadol50mg	
52	1310366	98	96	95	99	99	0	1	5	0	1	5	4	3	3	1	1	0	5	inf ropin	-	-	pcm1g	-	-	
53	250519	99	99	98	98	97	0	1	0	5	0	5	5	3	4	0	2	0	1	-	pcm1g	-	tramadol50mg	-	tramadol50mg	
54	591665	97	97	95	99	96	0	0	3	5	5	4	5	4	5	0	1	4	2	-	-	pcm1g	-	tramadol50mg	-	

Sr. No.	MRD No	algesics used							Hb		Hct		TLC		S.Urea		S.Creatinine		S.Sodium		S.Potassium		S.Chl
		24hr	28hr	32hr	36hr	40hr	44hr	48hr	24 hr	48 hr	24 hr	48 hr	24 hr	48 hr	24 hr	48 hr	24 hr	48 hr	24 hr	48 hr	24 hr	48 hr	24 hr
1	1013595	pcm1g	-	-	pcm1g	-	-	-	9.1	9.2	-	-	11.6	10.4	52	49	0.8	0.6	132	133	3.8	4	106
2	1139912	pcm1g	-	pcm1g	-	tramadol 50mg	-	-	12.4	12.2	-	-	11.6	10.4	22	24	1.4	1.2	142	144	3.9	4.2	106
3	931669	-	pcm1g	-	pcm1g	-	-	-	8.4	8.2	-	-	7.2	9.4	42	43	3.4	3.8	130	128	4.2	4.5	92
4	1159614	-	tramadol50mg	-	-	pcm1g	-	pcm1g	9.4	9.2	-	-	20.1	13.2	52	54	1.32	1.4	131	134	4.2	3.8	108
5	1018355	pcm1g	-	-	-	-	-	-	11	10.6	-	-	8.2	10.5	48	34	1.2	1.12	137	135	4.4	4.2	102
6	386689	pcm1g	-	pcm1g	-	-	pcm1g	-	10.4	10.2	-	-	8.9	8.6	34	34	0.9	1.2	134	136	4.8	4.8	102
7	1163738	tramadol 50mg	-	pcm1g	-	-	pcm1g	-	10.2	10	-	-	8.4	8.6	36	38	1.1	1.2	128	127	3.8	3.9	98
8	978705	tramadol 50mg	-	pcm1g	-	-	-	-	10.8	10.5	-	-	7.8	7.4	36	35	0.8	1.1	134	129	4.5	4.6	102
9	1176647	-	pcm1g	-	tramadol 50mg	-	pcm1g	-	13.2	12.8	-	-	8.2	7.6	36	34	1.1	1.2	140	138	3.7	4.2	100
10	334812	fentanyl50mcg	-	pcm1g	voveron75mg	pcm1g	-	pcm1g	10.2	10.8	-	-	7.6	8.6	34	26	0.9	1.1	129	130	4.2	4.3	98
11	1229183	pcm1g	-	pcm1g	-	pcm1g	-	pcm1g	10.8	10.4	-	-	10.4	9.7	45	38	1.1	1.07	138	135	4.7	4.6	106
12	1235784	voveron75mg	-	-	pcm1g	-	-	pcm1g	13.2	13.6	-	-	9.2	9.4	28	35	1.08	0.98	135	138	4.3	4.8	102
13	1232589	-	pcm1g	tramadol50mg	-	pcm1g	-	pcm1g	8.7	9.2	-	-	17.1	12.2	27	28	1.4	1	133	132	4.7	4.8	100
14	1243099	pcm1g	-	-	tramadol50mg	-	-	-	9.9	10.1	-	-	10.4	9.7	45	38	1.1	1.07	138	135	4.7	4.6	106
15	1265901	-	pcm1g	-	-	-	-	-	11.8	12.2	-	-	10.2	9.9	40	35	4.4	4.34	135	133	4.7	4.8	103
16	1137016	pcm1g	-	pcm1g	-	pcm1g	-	-	10.4	10.8	-	-	7	6.8	24	25	0.9	1.2	134	133	3.5	3.9	102
17	1130800	inf/ropin	-	-	-	-	-	-	12.8	13.2	-	-	10.2	9.8	35	40	1.1	0.9	133	132	3.8	3.7	102
18	1070123	-	pcm1g	-	-	pcm1g	-	-	10.8	11.7	-	-	6.8	8.4	45	47	1.1	0.9	133	132	3.8	3.9	100
19	1070112	-	pcm1g	-	tramadol50mg	-	tramadol50mg	-	9.8	10.7	-	-	4.6	5	22	22	1.2	1.5	141	141	3	3.3	103
20	1132013	pcm1g	-	-	pcm1g	-	-	pcm1g	10.4	11.3	-	-	8	6.8	31	36	0.6	1	141	141	4.1	3.7	99
21	1132365	-	pcm1g	-	-	pcm1g	-	-	12.5	12.9	-	-	12.3	13.8	21	25	0.6	0.4	129	134	4.6	4.7	101
22	1132371	-	tramadol50mg	-	tramadol50mg	-	pcm1g	-	13.3	11.9	-	-	7.4	7.9	39	40	1.3	1.1	140	138	4.4	4.8	104
23	1132609	-	pcm1g	-	-	tramadol50mg	-	-	9.2	9.4	-	-	6.7	6.1	41	44	1.3	1	132	131	3.1	3.1	102
24	1139912	-	pcm1g	-	-	-	pcm1g	-	14.2	13.4	-	-	6.4	6.5	16	16	1.3	1.6	133	138	3.8	3.5	107
25	1139839	-	pcm1g	-	-	pcm1g	pcm1g	pcm1g	10.1	9	-	-	6.8	6.6	24	26	1.4	1.4	130	130	4	3.3	100
26	420264	-	pcm1g	-	-	pcm1g	-	pcm1g	13.5	13.1	-	-	12.4	12	11	15	0.9	1	133	134	4.7	4.3	100
27	381078	tramadol50mg	-	-	-	tramadol50mg	-	pcm1g	12.2	12.2	-	-	9.1	9.5	17	21	0.9	1	147	145	3.5	3.7	103
28	1197892	-	-	-	tramadol50mg	-	pcm1g	-	8.4	7.8	-	-	8.7	10.4	45	48	0.8	1	127	126	3.6	3.4	99
29	1035213	-	tramadol50mg	-	pcm1g	pcm1g	-	-	9.5	9.7	-	-	5.2	4.1	33	29	1	1	134	133	3.7	3.8	102
30	1195155	-	-	tramadol50mg	-	-	-	-	9.4	9	-	-	8	8.2	39	43	1.2	1.2	148	148	2.9	3.7	103
31	915273	-	-	-	-	tramadol50mg	-	-	12.1	12	-	-	6.5	6.3	20	15	0.4	0.6	128	127	4.9	4.4	96
32	1163051	pcm1g	-	pcm1g	-	-	pcm1g	pcm1g	9.7	8	-	-	9.3	9.5	10	6	1.6	1.7	129	131	4.8	5.3	102
33	555882	-	pcm1g	-	pcm1g	-	pcm1g	pcm1g	11.8	12.3	-	-	9.9	9	19	17	0.8	0.5	131	128	4.1	5	93
34	1193765	tramadol50mg	-	-	pcm1g	-	pcm1g	pcm1g	9.6	8.9	-	-	7.9	6.6	11	10	0.6	0.9	135	136	4.7	4.5	103
35	1226876	-	-	-	pcm1g	-	-	-	11.2	11.2	-	-	5.5	6.9	18	22	0.6	0.7	137	134	3.3	3.8	98
36	1240542	-	pcm1g	-	pcm1g	-	tramadol50mg	-	10	11.3	-	-	6.2	8	43	39	2	1.5	135	136	3.3	3.7	102
37	1014413	-	-	pcm1g	-	pcm1g	-	-	11	12.5	-	-	12.4	11.6	38	33	0.8	0.7	133	132	3.2	3.1	98
38	1260749	-	pcm1g	-	-	-	tramadol50mg	-	15.2	14.4	-	-	7	5.5	42	39	0.8	1.3	136	135	3.7	3.8	98
39	151341	tramadol50mg	-	pcm1g	-	-	-	-	9.8	9.3	-	-	10.6	10.4	42	43	1.6	1.5	131	133	4.2	4.2	102
40	1260273	pcm1g	-	pcm1g	-	-	-	-	10.2	10.8	-	-	6.8	6.2	22	25	1.2	1.2	141	137	4.1	4	100
41	937649	-	-	pcm1g	-	pcm1g	-	pcm1g	8.9	8.2	-	-	7.6	8.3	21	21	1.1	0.7	125	125	5	5.2	92
42	1230346	pcm1g	-	pcm1g	-	-	pcm1g	tramadol50mg	12.7	11.3	-	-	10.9	10	13	8	0.6	0.9	137	138	4.2	4.6	95
43	1288919	-	-	-	tramadol50mg	-	pcm1g	-	9.4	10.7	-	-	9.1	8.8	42	39	0.9	0.4	132	136	4.2	4.4	102
44	1288947	-	-	-	pcm1g	-	-	pcm1g	9.6	10.2	-	-	10.9	13.1	50	48	1.1	1	136	133	4.7	4.4	104
45	1290633	-	pcm1g	-	-	pcm1g	-	-	8.7	8.6	-	-	15.7	13.2	47	47	1.1	1.4	135	134	3.4	4.1	98
46	1285897	-	-	pcm1g	-	pcm1g	-	-	12	12.7	-	-	6.4	5.3	28	33	1.2	1.2	139	140	3.8	3.8	100
47	1293060	pcm1g	-	pcm1g	-	pcm1g	-	pcm1g	10.3	12.1	-	-	8.1	8.1	49	44	0.5	0.6	136	137	3.4	3.5	102
48	1269699	pcm1g	-	-	-	-	-	-	11.3	10.7	-	-	5.5	7.2	42	38	1.3	0.8	136	134	3.6	3.6	102
49	130726	-	pcm1g	-	-	-	-	-	10.6	9.8	-	-	8.2	6.4	21	20	0.6	0.8	141	139	3.9	3.8	93
50	1300238	-	pcm1g	-	pcm1g	-	-	tramadol50mg	10	9.3	-	-	10.6	9.1	31	35	0.8	1.1	141	141	3.7	4.5	93
51	1238089	-	-	-	pcm1g	-	-	pcm1g	9.3	9.3	-	-	9.3	7.6	25	22	1	1.3	143	140	3.6	3.6	99
52	1310366	-	pcm1g	-	-	-	pcm1g	-	11.3	10.7	-	-	7.8	8.4	10	12	1.3	1.1	140	140	3.4	3.2	94
53	250519	-	pcm1g	-	-	-	-	-	10.2	10.2	-	-	6	6.5	26	26	1	1.2	136	138	4.1	4.3	93
54	591665	-	tramadol50mg	-	pcm1g	-	-	pcm1g	11.2	10.8	-	-	8	8.6	25	24	1	1.4	142	137	4.1	3.9	97

Sr. No.	MRD No	Postoperative Inv											DOS SCORE				MMSE SCORE			
		oride	S.Calcium		RBS		Average Pain Score (CNPI)			Analgesics used (amount)										
		48 hr	24 hr	48 hr	24 hr	48 hr	0hr	24 hr	48 hr	0hr	24 hr	48 hr	Pre-op	0hr	24hr	48hr	Pre-op	0hr	24hr	48hr
1	1013595	102	-	-	152	166	1	3	1	-	pcm3g	pcm1g	2	2	1	1	28	27	28	28
2	1139912	104	-	-	186	194	1	1	2	ropin 0.2% @6ml/hr	-	pcm2g+ tramadol 50mg	2	1	1	2	29	28	29	29
3	931669	98	-	-	154	178	1	4	2	-	pcm3g	pcm2g	3	4	4	3	24	23	24	25
4	1159614	105	-	-	186	217	0	3	3	-	pcm2g	pcm2g+ tramadol 50mg	4	3	5	3	24	24	23	24
5	1018355	104	-	-	189	210	0	1	1	-	pcm2g	-	1	1	1	2	27	28	27	26
6	386689	100	-	-	98	88	0	3	4	-	tramadol+ropin	pcm	3	4	3	1	29	27	29	30
7	1163738	102	-	-	98	102	0	5	3	-	pcm+tramadol	pcm+tramadol	4	5	7	5	24	23	23	23
8	978705	104	-	-	110	107	0	2	2	epidural inf + pcm+ tramadol	-	pcm	2	1	2	1	28	29	28	27
9	1176647	102	-	-	102	110	0	3	2	-	pcm+voveron	pcm+tramadol	2	3	2	3	28	27	27	28
10	334812	99	-	-	104	105	0	6	3	-	pcm+voveron	pcm+fentanyl	5	6	6	5	24	25	25	24
11	1229183	108	-	-	99	140	0	2	3	-	pcm+voveron	-	2	2	2	1	27	28	28	29
12	1235784	102	-	-	178	190	0	1	2	-	pcm+voveron	-	0	1	1	0	28	29	29	29
13	1232589	103	-	-	124	134	3	5	3	-	pcm+tramadol	pcm+tramadol	4	5	6	6	27	24	26	27
14	1243099	108	-	-	99	140	0	2	3	-	pcm+tramadol	-	2	2	2	1	27	28	28	29
15	1265901	104	-	-	155	160	1	1	0	-	pcm	-	2	2	4	4	28	26	27	27
16	1137016	100	-	-	122	124	0	2	2	-	pcm+tramadol	pcm	1	1	1	1	28	26	27	28
17	1130800	100	-	-	143	132	0	2	2	-	pcm	pcm	1	2	1	1	29	28	28	28
18	1070123	101	-	-	128	176	0	1	2	-	pcm	pcm	1	1	1	1	27	28	28	29
19	1070112	102	-	-	177	180	0	2	3	-	pcm	-	1	2	1	1	28	26	28	29
20	1132013	98	-	-	162	137	0	3	2	-	pcm	-	1	2	2	1	28	27	27	29
21	1132365	101	-	-	171	155	0	3	3	-	pcm+tramadol	pcm+tramadol	2	4	5	3	28	27	27	28
22	1132371	105	-	-	109	117	0	2	3	-	pcm	pcm+tramadol	1	2	3	1	28	29	27	26
23	1132609	102	-	-	109	104	0	2	2	-	pcm	tramadol	2	3	4	2	27	25	25	26
24	1139912	107	-	-	137	139	0	4	2	-	pcm	-	1	1	2	2	26	27	28	27
25	1139839	99	-	-	195	193	0	3	1	-	pcm	pcm+tramadol	2	3	4	3	28	26	28	28
26	420264	101	-	-	122	140	0	1	2	-	pcm	pcm	1	1	1	1	28	28	29	28
27	381078	102	-	-	128	132	0	3	3	-	inf ropin	pcm+tramadol	1	2	1	1	28	27	28	27
28	1197892	99	-	-	121	103	0	2	3	-	pcm	pcm+tramadol	3	4	5	3	26	27	27	25
29	1035213	101	-	-	123	140	0	2	3	-	pcm+tramadol	pcm	2	2	1	2	28	28	28	28
30	1195155	103	-	-	78	103	0	3	3	-	pcm	-	1	1	1	1	29	28	27	28
31	915273	98	-	-	84	97	0	3	4	-	pcm	tramadol	1	1	1	1	28	27	28	28
32	1163051	102	-	-	134	133	0	2	2	-	pcm	tramadol	1	2	2	1	29	27	27	28
33	555882	94	-	-	125	119	0	3	2	-	pcm +tramadol	pcm	1	1	2	1	28	29	28	29
34	1193765	101	-	-	192	214	0	4	1	-	tramadol	pcm	3	4	5	3	27	27	27	28
35	1226876	99	-	-	119	127	0	3	3	-	pcm	tramadol	1	1	2	1	29	28	28	29
36	1240542	100	-	-	138	116	0	2	3	-	tramadol + pcm	pcm	2	1	1	1	28	28	27	28
37	1014413	99	-	-	128	139	0	3	3	-	pcm	pcm+tramadol	1	2	2	1	28	29	28	29
38	1260749	99	-	-	140	110	0	2	3	-	pcm +tramadol	pcm	1	2	1	1	28	29	27	29
39	151341	100	-	-	182	150	0	3	2	-	pcm	pcm	1	1	2	1	28	27	28	28
40	1260273	100	-	-	130	140	0	2	3	-	pcm	pcm+tramadol	1	1	2	1	28	28	28	28
41	937649	93	-	-	213	178	0	3	2	-	pcm	pcm	2	5	3	2	27	27	28	28
42	1230346	96	-	-	98	79	0	2	2	-	pcm	pcm+tramadol	1	2	1	1	28	27	28	28
43	1288919	101	-	-	142	125	0	3	2	-	pcm	pcm	1	2	1	1	29	28	28	28
44	1288947	106	-	-	172	173	0	3	3	-	pcm+tramadol	pcm	2	2	1	1	28	27	27	28
45	1290633	99	-	-	230	208	0	2	2	-	pcm+tramadol	pcm	2	2	3	1	27	28	28	28
46	1285897	100	-	-	109	122	0	2	1	-	pcm	tramadol+pcm	1	1	1	1	28	27	28	28
47	1293060	101	-	-	137	147	0	1	2	-	pcm	pcm+tramadol	2	2	1	1	27	28	28	29
48	1269699	102	-	-	148	160	0	1	3	-	pcm+tramadol	pcm	1	1	1	1	28	29	28	29
49	130726	93	-	-	183	204	0	3	3	-	pcm+tramadol	-	1	1	2	1	28	29	27	29
50	1300238	91	-	-	211	232	0	4	2	-	pcm	-	1	1	1	1	28	29	28	28
51	1238089	97	-	-	150	144	0	3	2	-	pcm	pcm+tramadol	3	5	3	3	27	26	27	27
52	1310366	93	-	-	130	131	0	3	2	-	inf ropin	pcm	1	1	1	1	27	28	28	28
53	250519	92	-	-	111	114	0	3	2	-	pcm	pcm+tramadol	1	2	1	1	28	26	27	27
54	591665	96	-	-	113	76	0	4	3	-	pcm	pcm+tramadol	2	2	1	1	27	28	27	29

Sr. No.	MRD No	Initials	Date of Admission	Date of Surgery	Weight	Age	Height	Sex	History of Drug Allergy	BMI	Significant History	Comorbidities							
												Diabetes Mellitus	ESRD or CKD	Thyroid disease	Hypertension	Cirrhosis	Any other	Heart Disease	Cancer
55	3626	K	09/02/21	10/02/21	60	73	165	F	NKDA	22	PFN	-	-	-	Y	-	-	Y	-
56	896223	G	17/02/21	18/02/21	80	65	155	F	NKDA	33.3	Hemiarthroplasty	-	-	-	Y	-	-	Y	-
57	1032978	R	22/02/21	23/02/2021	78	82	160	F	NKDA	30.5	Hemiarthroplasty	Y	Y	-	-	-	-	-	-
58	887264	Bd	15/04/21	16/04/2021	65	78	160	F	NKDA	25.4	PFN	Y	-	-	Y	-	CVA	-	-
59	1085190	DD	15/04/21	16/04/2021	80	85	172	M	NKDA	27	PFN	-	-	-	-	Y	-	-	-
60	1094087	PC	23/04/21	24/04/2021	77	67	172	M	NKDA	26	Hemiarthroplasty	-	-	-	Y	-	-	Y	-
61	1125815	K	21/06/21	22/06/2021	80	65	162	F	NKDA	30.5	PFN	-	-	-	-	-	-	Y	-
62	1010875	Us	02/07/2021	03/07/2021	76	83	172	M	NKDA	25.7	Hemiarthroplasty	-	-	-	Y	-	-	-	-
63	1131006	Br	02/07/2021	03/07/2021	74	71	175	M	NKDA	24.2	Hemiarthroplasty	-	-	Y	Y	-	-	-	-
64	1132363	BD	05/07/2021	06/07/2021	75	77	154	F	NKDA	31.6	PFN	Y	-	-	-	-	-	-	-
65	1016986	Sd	14/07/2021	15/07/2021	65	70	152	F	NKDA	28.1	PFN	Y	-	-	Y	-	-	Y	-
66	1137220	JK	15/07/2021	16/07/2021	68	80	157	F	NKDA	27.6	PFN	-	-	-	Y	-	-	-	-
67	867815	SK	19/07/2021	20/07/2021	70	71	154	F	NKDA	29.5	Hemiarthroplasty	Y	Y	-	-	-	-	-	-
68	1140962	Sr	22/07/2021	23/07/2021	72	76	157	F	NKDA	29.2	PFN	Y	-	-	Y	-	-	-	-
69	1142450	Ac	25/07/2021	26/07/2021	78	65	172	M	NKDA	26.4	PFN	Y	-	-	Y	-	CVA	-	-
70	879728	SS	26/08/2021	27/08/2021	75	78	172	M	NKDA	25.4	Hemiarthroplasty	-	-	-	-	Y	-	-	-
71	850981	SB	27/08/2021	28/08/2021	75	73	157	F	NKDA	30.4	PFN	Y	-	-	Y	-	-	Y	-
72	1172799	MD	13/09/2021	14/09/2021	64	68	160	F	NKDA	25	Hemiarthroplasty	-	-	-	-	-	TB	-	-
73	1167571	DK	22/09/2021	23/09/2021	80	75	172	M	NKDA	27	Hemiarthroplasty	-	-	-	-	-	-	-	-
74	1175684	SD	22/09/2021	23/09/2021	62	61	154	F	NKDA	26.1	PFN	-	-	-	-	-	-	Y	-
75	955547	BD	01/11/2021	02/11/2021	72	68	170	M	NKDA	24.9	Hemiarthroplasty	Y	-	-	Y	-	-	-	-
76	1201491	TR	4/11/2021	5/11/2021	75	76	165	M	NKDA	27.5	PFN	Y	-	-	-	-	-	-	-
77	610793	MS	8/11/2021	9/11/2021	80	81	162	M	NKDA	30.5	PFN	-	-	-	Y	-	-	-	-
78	1204874	K	10/11/2021	11/11/2021	82	60	157	F	NKDA	33.3	Hemiarthroplasty	-	-	-	Y	-	-	-	-
79	1213340	Sk	24/11/2021	25/11/2021	65	85	154	F	NKDA	27.4	PFN	Y	-	-	Y	-	-	Y	-
80	344749	PK	24/11/2021	25/11/2021	78	72	157	F	NKDA	31.6	PFN	-	-	-	Y	-	-	Y	-
81	1213571	SK	24/11/2021	25/11/2021	70	69	152	F	NKDA	30.3	PFN	Y	-	-	Y	-	CKD	Y	-
82	1215813	RP	28/11/2021	29/11/2021	60	83	157	F	NKDA	24.3	PFN	-	-	-	-	-	-	Y	-
83	1215854	SR	29/11/2021	30/11/2021	64	60	157	F	NKDA	26	PFN	-	-	-	Y	-	-	-	-
84	1220243	GS	7/12/2021	8/12/2021	82	66	172	M	NKDA	27.7	PFN	-	-	-	Y	-	-	-	-
85	1228034	S	22/12/2021	23/12/2021	65	73	154	F	NKDA	27.4	Hemiarthroplasty	Y	-	-	Y	-	-	Y	-
86	1243099	B	23/01/2022	24/01/2022	78	65	175	M	NKDA	25.5	PFN	-	-	-	-	-	-	Y	-
87	1247934	A	02/02/2022	03/02/2022	75	63	170	M	NKDA	26	PFN	-	-	-	-	-	obese class 2	-	-
88	1247920	Rd	2/2/2022	3/2/2022	77	86	170	M	NKDA	26.6	PFN	-	-	-	-	-	bedridden	-	-
89	1244682	D	04/02/2022	05/02/2022	60	71	154	F	NKDA	25.3	PFN	Y	-	-	Y	-	-	-	-
90	1250701	Hk	09/02/2022	10/02/2022	62	77	162	F	NKDA	23.6	PFN	Y	-	-	-	-	-	Y	-
91	1252454	TJ	15/02/2022	16/02/2022	70	88	152	F	NKDA	30.3	PFN	-	-	-	Y	-	-	-	-
92	1258913	Tk	23/02/2022	24/02/2022	65	83	157	F	NKDA	26.4	PFN	Y	-	-	Y	-	-	Y	-
93	1678921	BS	12/09/2021	13/09/2021	75	76	165	M	NKDA	27.5	PFN	Y	-	-	-	-	-	-	-
94	1711234	RK	20/09/2021	21/09/2021	80	81	162	M	NKDA	30.5	PFN	-	-	-	Y	-	-	-	-
95	1972312	SD	22/10/2021	23/10/2021	82	60	157	F	NKDA	33.3	Hemiarthroplasty	-	-	-	Y	-	-	-	-
96	1226781	KR	01/12/2021	02/12/2021	65	85	154	F	NKDA	27.4	PFN	Y	-	-	Y	-	-	Y	-
97	1445571	RK	03/02/21	04/02/21	76	82	175	M	NKDA	24.8	PFN	Y	-	-	Y	-	-	-	-
98	1765411	JS	04/02/21	05/02/21	87	90	186	M	NKDA	25.1	Hemiarthroplasty	-	-	-	-	-	-	Y	-
99	1782312	RD	07/02/21	08/02/21	60	73	165	F	NKDA	22	PFN	-	-	-	Y	-	-	Y	-
100	1879871	MD	16/03/21	17/03/21	80	65	155	F	NKDA	33.3	Hemiarthroplasty	-	-	-	Y	-	-	Y	-

Sr. No.	MRD No	Smoking History (No. of packs per day)	Alcoholic History (No.of drinks per day)	Investigations												Preoperative Assessment				
				Hb	S.Urea	S.Chloride	TLC	S.Creatinine	S.Calcium	Hematocrit	S.Sodium	RBS	PLT	S.Potassium	S.TSH (If h/o Thyroid disease)	SBP (mmHg)	DBP	SpO2	DOS Score	MMSE Score
55	3626	-	-	9.2	34	94	7.2	0.9	-	-	142	112	256	3.9	-	130	71	100%	2	27
56	896223	-	-	11.2	32	98	8.3	0.8	-	-	143	122	245	4.2	-	146	118	100%	1	29
57	1032978	-	-	12.3	75	105	7.2	1.11	-	-	140	117	130	4.6	-	123	71	100%	1	28
58	887264	-	4	13.5	17	108	6.7	1.5	-	-	136	144	299	3.8	-	124	95	100%	1	26
59	1085190	-	3	9.2	56	99	7.9	1.1	-	-	129	188	95	3.5	-	125	87	100%	2	28
60	1094087	-	4	11.3	33	98	5.6	0.9	-	-	135	114	236	3.8	-	148	108	100%	1	29
61	1125815	2	2	11.6	22	98	11.7	0.8	-	-	134	122	288	2.9	-	154	113	100%	1	28
62	1010875	-	2	10.2	23	101	10	1.34	-	-	133	167	345	3.8	-	158	110	100%	2	28
63	1131006	-	-	10.2	14	101	5.8	1.01	-	-	139	134	223	3.9	3.9	148	121	100%	1	28
64	1132363	1	2	9.2	25	93	7.3	0.9	-	-	123	198	239	5.17	-	160	135	100%	2	27
65	1016986	-	-	11.1	34	99	7.5	0.7	-	-	139	142	112	4.2	-	138	78	100%	1	28
66	1137220	-	-	12.4	33	101	13.3	0.6	-	-	131	162	144	4.2	-	149	108	100%	2	28
67	867815	-	-	12.3	75	105	7.2	1.11	-	-	140	117	130	4.6	-	123	64	100%	1	28
68	1140962	-	-	8.7	34	102	5.6	1.02	-	-	133	114	239	3.5	-	121	89	100%	2	27
69	1142450	-	4	13.5	17	108	6.7	1.5	-	-	136	144	299	3.8	-	124	84	100%	1	26
70	879728	-	3	9.2	56	99	7.9	1.1	-	-	129	188	95	3.5	-	125	97	100%	2	28
71	850981	-	2	12.9	24	101	11.5	1.01	-	-	134	133	301	4.2	-	148	113	100%	1	29
72	1172799	2	2	11.2	35	102	9.7	1.02	-	-	144	144	208	3.8	-	140	94	100%	1	28
73	1167571	-	-	8.2	21	99	9.8	0.87	-	-	129	112	310	3.2	-	110	77	100%	3	26
74	1175684	-	-	9.4	67	101	5.6	1.08	-	-	133	142	333	3.7	-	130	90	100%	2	28
75	955547	1	2	9.2	11	102	7.8	1.09	-	-	145	88	122	3.4	-	138	103	100%	1	29
76	1201491	-	-	11.9	39	97	7.4	0.67	-	-	128	88	305	4.8	-	124	99	100%	1	28
77	610793	-	3	9	81	101	9.7	1.59	-	-	130	78	239	4.8	-	140	118	100%	2	29
78	1204874	-	2	11.9	44	94	8.7	0.68	-	-	128	109	347	4.5	-	140	114	100%	1	28
79	1213340	-	-	9.2	42	102	7.1	0.82	-	-	138	212	420	4.63	-	150	87	100%	3	27
80	344749	-	4	11.3	33	98	5.6	0.9	-	-	135	114	236	3.8	-	148	121	100%	1	29
81	1213571	-	3	10.8	69	101	7.7	1.8	-	-	133	124	308	3.4	-	150	107	100%	2	28
82	1215813	2	2	11.6	22	98	11.7	0.8	-	-	134	122	288	2.9	-	154	123	100%	1	28
83	1215854	1	2	14.2	22	98	6.7	1.1	-	-	134	125	432	3.4	-	150	128	100%	1	29
84	1220243	-	2	10.2	23	101	10	1.34	-	-	133	167	345	3.8	-	158	110	100%	2	28
85	1228034	-	-	13.2	36	92	8.2	1.2	-	-	132	146	342	3.8	-	130	80	100%	4	24
86	1243099	-	-	12.3	29	104	8.7	0.63	-	-	144	108	224	4.26	-	140	86	100%	2	28
87	1247934	-	3	14.8	23	100	6.8	0.8	-	-	141	100	158	4.6	-	120	70	100%	2	29
88	1247920	-	-	11.5	34	105	9	0.48	-	-	130	104	332	4.4	-	130	72	100%	5	25
89	1244682	-	2	11.2	32	102	8.2	0.9	-	-	137	156	226	4.1	-	140	90	100%	2	27
90	1250701	4	2	14.7	24	98	10.4	1.1	-	-	133	190	216	3.9	-	136	94	100%	0	28
91	1252454	-	-	9.2	36	100	24	1.2	-	-	140	128	224	4.4	-	140	96	100%	4	27
92	1258913	-	3	10.3	47	105	11.4	0.7	-	-	138	250	152	4.5	-	154	110	100%	2	29
93	1678921	-	-	11.9	39	97	7.4	0.67	-	-	128	88	305	4.8	-	124	99	100%	1	28
94	1711234	-	3	9	81	101	9.7	1.59	-	-	130	113	239	4.8	-	140	118	100%	2	29
95	1972312	-	2	11.9	44	94	8.7	0.68	-	-	128	109	347	4.5	-	140	114	100%	1	28
96	1226781	-	-	9.2	42	102	7.1	0.82	-	-	138	212	420	4.63	-	150	87	100%	3	27
97	1445571	-	4	9.2	34	92	6.7	0.9	-	-	136	118	143	4.2	-	150	104	100%	1	29
98	1765411	-	2	10.2	48	96	7.8	1.2	-	-	139	94	235	3.9	-	130	92	100%	2	28
99	1782312	-	-	9.2	34	94	7.2	0.9	-	-	142	112	256	3.9	-	130	71	100%	2	27
100	1879871	-	-	11.2	32	98	8.3	0.8	-	-	143	122	245	4.2	-	146	118	100%	1	29

Sr. No.	MRD No	RR	HR	Premedication (if any)	Intraoperative Assessment											
					Type and Duration of Surgery	Type of Anaesthesia	Sedative Drugs used (if any)	Analgesic(s) used intraoperatively	Volume of Fluids transfused	Volume of Blood transfused	Volume of Blood loss	Episodes of Hypotension (1 or > 1)	Episodes of Hypoxemia (SpO2 <90%) (1 or > 1)	0hr	4hr	8hr
55	3626	12	75	-	ortho/70mins	SAB	-	-	1800ml	-	200ml	1	0	145/88	148/92	130/98
56	896223	12	109	-	ortho/75mins	SAB	-	-	1400ml	-	250ml	1	0	160/98	155/86	170/106
57	1032978	18	95	-	ortho/60mins	SAB	-	pcm1g	1000ml	-	150ml	0	0	145/90	148/94	130/100
58	887264	17	108	-	ortho/60mins	CSE	-	-	2000ml	-	300ml	1	0	142/99	150/96	146/93
59	1085190	12	94	-	ortho/60mins	SAB	-	fentanyl 20mcg	1500ml	-	100ml	0	0	150/103	152/99	160/101
60	1094087	17	66	-	ortho/60mins	SAB	midaz1mg	-	700ml	-	50ml	1	0	160/101	155/89	170/109
61	1125815	15	69	-	ortho/60mins	SAB	midaz1mg	-	200ml	-	100ml	1	0	150/104	152/100	160/102
62	1010875	12	84	-	ortho/60mins	SAB	midaz1mg	-	300ml	-	75ml	1	0	160/102	155/90	170/110
63	1131006	17	70	-	ortho/60mins	SAB	-	-	900ml	-	50ml	0	0	142/101	150/98	146/95
64	1132363	16	95	-	ortho/60mins	SAB	-	-	1500ml	-	200ml	1	0	150/105	152/101	160/103
65	1016986	15	88	-	ortho/60mins	CSE	-	-	1500ml	-	350ml	1	0	160/103	155/91	170/111
66	1137220	18	64	-	ortho/60mins	SAB	midaz1mg	fentanyl 20mcg	1300ml	-	200ml	1	0	142/102	150/99	146/96
67	867815	15	92	-	ortho/60mins	SAB	-	pcm1g	1000ml	-	150ml	1	0	150/106	152/102	160/104
68	1140962	13	82	-	ortho/60mins	SAB	midaz1mg	-	1200ml	350ml	200ml	1	0	150/89	152/85	160/87
69	1142450	17	65	-	ortho/60mins	CSE	-	-	2000ml	-	300ml	1	0	145/77	148/81	130/87
70	879728	17	107	-	ortho/60mins	SAB	-	fentanyl 20mcg	1500ml	-	100ml	0	0	160/87	155/75	170/95
71	850981	12	94	-	ortho/60mins	SAB	-	-	1000ml	-	150ml	0	0	142/86	150/83	146/80
72	1172799	17	82	-	ortho/60mins	CSE	midaz1mg	-	1800ml	-	200ml	1	0	150/90	152/86	160/88
73	1167571	17	106	-	ortho/60mins	SAB	-	-	1200ml	350ml	300ml	0	0	160/88	155/76	170/96
74	1175684	15	103	-	ortho/60mins	SAB	-	-	1200ml	-	200ml	0	0	142/87	150/84	146/81
75	955547	18	101	-	ortho/60mins	SAB	-	-	500ml	-	50ml	0	0	142/87	150/84	146/81
76	1201491	13	86	-	ortho/60mins	CSE	-	-	1800ml	-	200ml	1	0	150/91	152/87	160/89
77	610793	14	94	-	ortho/60mins	SAB	-	-	1500ml	-	200ml	0	0	145/79	148/83	130/89
78	1204874	16	80	-	ortho/60mins	SAB	midaz 1mg	fentanyl 20mcg	1800ml	-	350ml	1	0	160/89	155/77	170/97
79	1213340	14	88	-	ortho/60mins	SAB	midaz2mg	-	1400ml	-	200ml	1	0	150/92	152/88	160/90
80	344749	18	106	-	ortho/60mins	SAB	midaz1mg	-	700ml	-	50ml	1	0	145/80	148/84	130/90
81	1213571	15	76	-	ortho/60mins	SAB	-	-	1500ml	-	200ml	1	0	160/90	155/78	170/98
82	1215813	13	76	-	ortho/60mins	SAB	midaz1mg	-	200ml	-	100ml	1	0	150/93	152/89	160/91
83	1215854	12	70	-	ortho/60mins	SAB	midaz1mg	-	200ml	-	200ml	0	0	145/81	148/85	130/91
84	1220243	16	82	-	ortho/60mins	SAB	midaz1mg	-	300ml	-	75ml	1	0	160/91	155/79	170/99
85	1228034	15	96	-	ortho/60mins	SAB+obturator block	midaz1mg	-	100ml	-	50ml	2	0	110/60	130/70	136/86
86	1243099	18	78	-	ortho/60mins	CSE	fenta50mcg	-	2500ml	-	500ml	1	0	130/70	130/80	132/87
87	1247934	20	86	-	ortho/60mins	SAB	-	-	1000ml	-	200ml	1	0	130/80	134/72	134/78
88	1247920	14	74	-	ortho/60mins	SAB	-	-	1000ml	-	300ml	1	0	142/78	134/76	122/80
89	1244682	16	78	-	ortho/60mins	SAB	-	-	2000ml	-	200ml	1	0	130/70	140/80	136/64
90	1250701	15	86	-	ortho/60mins	SAB	midaz1mg	-	1000ml	-	100ml	1	0	110/76	142/76	145/87
91	1252454	14	102	-	ortho/60mins	SAB	-	-	1500ml	-	150ml	0	0	130/80	134/72	132/82
92	1258913	13	83	-	ortho/60mins	SAB	-	-	1500ml	-	200ml	0	0	140/73	140/80	136/64
93	1678921	13	86	-	ortho/60mins	CSE	-	-	1800ml	-	200ml	1	0	150/91	152/87	160/89
94	1711234	14	94	-	ortho/60mins	SAB	-	-	1500ml	-	200ml	0	0	145/79	148/83	130/89
95	1972312	16	80	-	ortho/60mins	SAB	midaz 1mg	fentanyl 20mcg	1800ml	-	350ml	1	0	160/89	155/77	170/97
96	1226781	14	88	-	ortho/60mins	SAB	midaz2mg	-	1400ml	-	200ml	1	0	150/92	152/88	160/90
97	1445571	16	93	-	ortho/60mins	SAB	midaz 1mg	-	1200ml	-	200ml	1	0	142/96	150/93	146/90
98	1765411	13	77	-	ortho/60mins	SAB	-	-	1500ml	-	200ml	0	0	150/100	152/96	160/98
99	1782312	12	75	-	ortho/70mins	SAB	-	-	1800ml	-	200ml	1	0	145/88	148/92	130/98
100	1879871	12	109	-	ortho/75mins	SAB	-	-	1400ml	-	250ml	1	0	160/98	155/86	170/106

Sr. No.	MRD No	SBP/DBP										HR												SpO2							
		12hr	16hr	20hr	24hr	28hr	32hr	36hr	40hr	44hr	48hr	0hr	4hr	8hr	12hr	16hr	20hr	24hr	28hr	32hr	36hr	40hr	44hr	48hr	0hr	4hr	8hr	12hr	16hr	20hr	24hr	28hr
55	3626	145/89	148/93	130/99	145/90	148/94	130/100	145/91	148/95	130/101	145/92	119	105	91	107	80	86	110	114	88	107	84	101	64	96	96	98	100	97	100	100	98
56	896223	160/99	155/87	170/107	160/100	155/88	170/108	160/101	155/89	170/109	160/102	98	79	82	96	65	65	86	69	69	73	108	115	78	95	96	97	99	96	98	99	97
57	1032978	145/91	148/95	130/101	145/92	148/96	130/102	145/93	148/97	130/103	145/94	96	94	60	69	77	81	88	85	81	75	85	75	114	95	97	96	98	95	97	96	98
58	887264	155/101	142/100	150/97	146/94	155/102	142/100	150/97	146/94	155/102	142/101	113	115	92	82	96	90	116	135	81	68	83	71	112	98	98	96	95	99	99	97	96
59	1085190	165/103	150/104	152/100	160/102	165/104	150/105	152/101	160/103	165/105	150/106	67	83	83	97	60	40	93	93	81	66	87	90	111	96	99	98	95	96	98	97	96
60	1094087	160/102	155/90	170/110	160/103	155/91	170/111	160/104	155/92	170/112	160/105	107	119	75	75	117	114	63	68	62	79	111	99	75	97	95	98	96	96	99	97	96
61	1125815	165/104	150/105	152/101	160/103	165/105	150/106	152/102	160/104	165/106	150/107	80	90	74	59	86	71	94	78	84	72	65	68	108	98	97	96	97	100	99	95	95
62	1010875	160/103	155/91	170/111	160/104	155/92	170/112	160/105	155/93	170/113	160/106	65	54	99	106	95	101	105	102	115	129	108	121	90	99	95	96	95	98	95	98	96
63	1131006	155/103	142/102	150/99	146/96	155/104	142/102	150/99	146/96	155/104	142/103	92	74	116	110	80	93	91	93	78	66	120	121	63	96	98	99	96	98	96	95	97
64	1132363	165/105	150/106	152/102	160/104	165/106	150/107	152/103	160/105	165/107	150/108	69	58	116	131	78	74	114	99	75	91	99	89	102	95	98	96	95	99	97	97	98
65	1016986	160/104	155/92	170/112	160/105	155/93	170/113	160/106	155/94	170/114	160/107	72	78	62	58	99	117	115	129	81	90	106	89	73	97	97	98	98	96	98	98	99
66	1137220	155/104	142/103	150/100	146/97	155/105	142/103	150/100	146/97	155/105	142/104	69	55	115	135	113	99	106	93	79	67	114	119	94	95	97	98	99	98	97	96	98
67	867815	165/106	150/107	152/103	160/105	165/107	150/108	152/104	160/106	165/108	150/109	119	105	118	101	104	108	83	76	73	81	105	94	103	98	95	97	98	99	98	99	99
68	1140962	165/89	150/90	152/86	160/88	165/90	150/91	152/87	160/89	165/91	150/92	114	111	99	81	116	105	108	113	120	114	108	96	81	100	99	97	100	97	99	98	97
69	1142450	145/78	148/82	130/88	145/79	148/83	130/89	145/80	148/84	130/90	145/81	74	90	106	87	106	88	104	94	119	136	113	118	115	96	96	97	99	96	95	100	99
70	879728	160/88	155/76	170/96	160/89	155/08	170/097	160/90	155/78	170/098	160/91	69	65	110	121	112	92	66	66	105	111	62	64	78	95	98	100	99	100	97	95	96
71	850981	155/88	142/87	150/84	146/81	155/20	142/87	150/84	146/81	155/89	142/88	107	121	67	65	72	69	85	69	109	101	71	83	68	100	100	96	99	96	95	96	99
72	1172799	165/90	150/91	152/87	160/89	165/91	150/92	152/88	160/90	165/92	150/93	103	121	62	69	69	73	74	87	115	134	76	64	119	98	98	98	97	97	97	97	100
73	1167571	160/89	155/77	170/97	160/90	155/32	170/098	160/91	155/79	170/099	160/92	67	77	85	104	104	101	76	93	117	108	77	74	116	98	96	98	100	97	100	100	96
74	1175684	155/89	142/88	150/85	146/82	155/44	142/88	150/85	146/82	155/90	142/89	63	69	103	102	68	71	60	73	82	66	95	91	88	99	95	98	96	99	96	99	96
75	955547	155/89	142/88	150/85	146/82	155/90	142/88	150/85	146/82	155/90	142/89	113	126	98	108	110	96	95	108	90	71	104	100	80	97	99	99	100	100	97	97	98
76	1201491	165/91	150/92	152/88	160/90	165/92	150/93	152/89	160/91	165/93	150/94	78	69	80	89	102	97	112	113	103	120	92	89	85	97	99	98	96	99	95	96	97
77	610793	145/80	148/84	130/90	145/81	148/85	130/91	145/82	148/86	130/92	145/83	85	96	116	119	120	119	64	69	66	81	96	99	81	98	99	100	98	96	99	99	95
78	1204874	160/90	155/78	170/98	160/91	155/56	170/99	160/92	155/80	170/100	160/93	116	105	99	82	104	92	110	92	83	84	116	128	116	100	96	95	97	97	98	97	98
79	1213340	165/92	150/93	152/89	160/91	165/93	150/94	152/90	160/92	165/94	150/95	118	123	61	56	90	96	114	111	98	97	90	93	70	96	96	100	95	97	100	97	97
80	344749	145/81	148/85	130/91	145/82	148/86	130/92	145/83	148/87	130/93	145/84	94	113	81	75	77	62	69	63	100	101	72	55	117	96	95	97	98	100	95	100	95
81	1213571	160/91	155/79	170/99	160/92	155/57	170/100	160/93	155/81	170/101	160/94	110	99	112	107	110	130	75	93	115	125	71	63	60	96	95	99	96	97	99	96	98
82	1215813	165/93	150/94	152/90	160/92	165/94	150/95	152/91	160/93	165/95	150/96	68	88	86	100	70	71	87	70	101	96	96	110	95	100	100	95	97	98	98	98	100
83	1215854	145/82	148/86	130/92	145/83	148/87	130/93	145/84	148/88	130/94	145/85	95	100	118	119	65	85	68	57	79	91	69	83	73	100	96	99	96	100	100	98	98
84	1220243	160/92	155/80	170/100	160/93	155/58	170/101	160/94	155/82	170/102	160/95	100	113	106	120	73	62	116	97	72	82	82	79	83	97	99	97	99	97	99	99	98
85	1228034	134/76	135/89	138/88	122/76	124/78	134/88	124/88	124/68	133/68	140/84	96	104	106	106	108	112	110	112	110	114	112	102	110	98	100	100	100	99	99	100	98
86	1243099	140/72	142/78	146/78	124/66	122/45	128/68	134/88	145/88	134/64	130/85	86	88	86	90	86	88	58	88	100	98	90	66	68	100	100	100	100	99	99	98	99
87	1247934	136/76	124/88	122/86	122/76	132/86	118/67	134/88	112/88	114/67	129/45	86	88	84	90	85	76	75	75	76	78	95	78	66	100	98	98	97	96	98	99	100
88	1247920	129/96	102/70	98/72	100/60	110/72	112/82	114/88	138/98	134/72	142/88	96	110	112	98	95	98	114	110	112	97	98	96	98	100	100	98	99	100	99	99	100
89	1244682	138/72	142/76	146/78	134/78	138/68	128/98	142/82	138/68	140/82	132/89	97	87	88	90	88	86	88	95	88	78	75	82	88	100	100	100	100	100	99	98	100
90	1250701	138/62	135/76	142/78	134/97	128/78	132/76	134/82	136/54	138/86	132/82	67	68	88	92	86	75	74	86	82	84	82	76	78	100	100	100	99	97	100	98	100
91	1252454	142/76	135/54	122/78	124/78	114/68	115/76	114/88	122/78	134/86	122/86	104	105	109	110	108	106	105	101	99	98	97	95	94	99	100	100	99	99	98	100	98
92	1258913	138/72	143/79	146/78	134/78	139/82	128/98	122/79	138/68	140/82	132/89	97	87	88	90	88	86	88	95	88	78	75	82	88	100	100	100	100	100	99	98	100
93	1678921	165/91	150/92	152/88	160/90	165/92	150/93	152/89	160/91	165/93	150/94	78	69	80	89	102	97	112	113	103	120	92	89	85	97	99	98	96	99	95	96	97
94	1711234	145/80	148/84	130/90	145/81	148/85	130/91	145/82	148/86	130/92	145/83	85	96	116	119	120	119	64	69	66	81	96	99	81	98	99	100	98	96	99	99	95
95	1972312	160/90	155/78	170/98	160/91	155/56	170/99	160/92	155/80	170/100	160/93	116	105	99	82	104	92	110	92	83	84	116	128	116	100	96	95	97	97	98	97	98
96	1226781	165/92	150/93	152/89	160/91	165/93	150/94	152/90	160/92	165/94	150/95	118	123	61	56	90	96	114	111	98	97	90	93	70	96	96	100	95	97	100	97	97
97	1445571	155/98	142/97	150/94	146/91	155/99	142/97	150/94	146/91	155/99	142/98	104	91	82	71	83	63	91	109	117	101	79	99	86	99	99	96	99	99	98	96	99
98	1765411	165/100	150/101	152/97	160/99	165/101	150/102	152/98	160/100	165/102	150/103	105	115	61	58	95	95	82	66	82	101	106	103	93	97	99	97	98	96	96	98	99
99	1782312	145/89	148/93	130/99	145/90	148/94	130/100	145/91	148/95	130/101	145/92	119	105	91	107	80	86	110	114	88	107	84	101	64	96	96	98	100	97	100	100	98
100	1879871	160/99	155/87	170/107	160/100	155/88	170/108	160/101	155/89	170/109	160/102	98	79	82	96	65	65	86	69	69	73	108	115	78	95	96	97	99	96	98	99	97

Sr. No.	MRD No	Postoperative Assessment																							Ar
		Vitals																							
							Pain Score (CNPI)																		
		32hr	36hr	40hr	44hr	48hr	0hr	4hr	8hr	12hr	16hr	20hr	24hr	28hr	32hr	36hr	40hr	44hr	48hr	0hr	4hr	8hr	12hr	16hr	20hr
55	3626	96	95	99	96	96	0	3	5	3	0	2	2	0	3	0	0	2	0	-	pcm1g	-	pcm1g	-	pcm1g
56	896223	98	95	99	100	100	0	0	2	5	3	1	4	5	0	1	0	4	0	-	pcm1g	-	-	pcm1g	-
57	1032978	100	98	99	96	95	0	4	0	5	3	3	0	3	5	3	5	3	0	-	tramadol50mg	-	-	-	pcm1g
58	887264	95	96	97	97	97	0	5	4	2	3	2	4	5	0	0	2	5	4	-	tramadol50mg	-	-	pcm1g	-
59	1085190	95	96	96	100	97	0	2	3	0	1	5	3	2	5	5	0	4	4	-	-	pcm1g	-	pcm1g	-
60	1094087	98	97	97	96	97	0	4	1	3	0	4	4	1	5	2	4	3	1	-	tramadol50mg	-	-	-	pcm1g
61	1125815	100	97	100	96	95	0	3	2	4	3	5	1	1	1	1	5	1	1	-	pcm1g	-	tramadol50mg	-	tramadol50mg
62	1010875	95	98	98	97	98	0	2	1	2	5	3	4	4	3	1	4	4	2	-	-	pcm1g	-	tramadol50mg	-
63	1131006	98	97	99	95	98	0	3	5	0	2	5	5	1	3	3	1	5	4	-	pcm1g	-	pcm1g	-	tramadol50mg
64	1132363	98	96	97	96	96	0	0	4	4	5	5	3	5	5	3	4	3	0	-	pcm1g	-	tramadol50mg	-	tramadol50mg
65	1016986	98	96	98	99	99	0	1	2	3	1	2	2	0	1	1	0	0	1	inf ropin	-	inf ropin	-	pcm1g	-
66	1137220	96	100	100	97	95	0	0	3	1	1	4	4	5	5	2	0	0	0	-	pcm1g	-	pcm1g	-	pcm1g
67	867815	96	99	99	99	97	0	0	4	3	3	5	0	4	4	4	5	0	5	-	-	-	pcm1g	-	tramadol50mg
68	1140962	97	98	99	96	100	0	2	0	2	2	1	1	1	4	0	0	1	1	-	pcm1g	-	-	pcm1g	-
69	1142450	96	96	97	97	95	0	1	2	5	0	1	2	5	1	0	4	3	2	inf ropin	-	-	inf ropin	-	-
70	879728	95	100	100	99	97	0	0	3	2	3	5	4	1	4	5	2	3	4	-	-	-	pcm1g	-	tramadol50mg
71	850981	98	96	95	100	95	0	1	0	5	3	1	5	2	1	4	1	5	2	-	pcm1g	-	tramadol50mg	-	pcm1g
72	1172799	98	99	95	97	95	0	5	4	3	1	2	4	5	0	1	2	4	0	inf ropin	-	tramadol50mg	-	pcm1g	-
73	1167571	96	97	97	100	99	0	1	4	2	1	3	2	2	5	0	5	1	2	-	pcm1g	-	-	-	pcm1g
74	1175684	99	96	95	95	95	0	4	0	0	3	5	4	5	0	3	5	4	5	pcm1g	-	-	-	pcm1g	-
75	955547	99	98	100	96	100	0	3	4	2	4	2	4	1	1	5	4	2	2	-	-	-	-	-	pcm1g
76	1201491	98	96	97	99	96	0	5	5	1	3	2	1	1	3	4	5	5	0	inf ropin	-	-	pcm1g	-	pcm1g
77	610793	98	98	99	100	97	0	3	1	2	0	2	4	1	3	3	1	0	2	-	pcm1g	-	-	pcm1g	-
78	1204874	96	99	99	96	97	0	4	0	2	0	3	1	5	4	5	2	3	2	-	tramadol50mg	-	pcm1g	-	pcm1g
79	1213340	100	97	96	100	97	0	0	0	4	3	1	1	2	5	5	4	4	4	-	pcm1g	-	tramadol50mg	-	-
80	344749	98	97	98	98	96	0	0	2	0	1	2	4	1	3	3	3	1	0	-	pcm1g	-	pcm1g	-	pcm1g
81	1213571	95	95	97	95	100	0	1	2	3	3	1	0	1	1	2	0	2	2	-	pcm1g	-	pcm1g	-	-
82	1215813	99	95	98	95	97	0	2	1	5	5	3	4	1	5	2	3	2	0	-	Pcm1g	-	tramadol50mg	-	-
83	1215854	96	100	98	100	97	0	0	0	5	0	3	3	5	1	1	3	1	5	-	pcm1g	-	pcm1g	-	-
84	1220243	100	95	98	96	98	0	5	1	5	5	1	0	0	1	4	0	1	1	-	-	pcm1g	-	-	-
85	1228034	99	98	98	97	99	0	4	5	4	5	5	5	4	4	3	3	3	2	pcm1g	-	tramadol50mg	-	pcm1g	-
86	1243099	100	100	100	99	99	0	1	1	1	3	2	1	1	1	1	2	2	2	inf ropin 0.2%@8ml/hr	-	-	-	pcm1g	-
87	1247934	98	98	100	100	100	0	2	2	4	2	2	2	2	2	1	3	2	2	-	pcm1g	-	voveron75mg	-	pcm1g
88	1247920	99	100	100	99	100	2	5	6	7	6	4	3	3	3	2	1	2	1	-	pcm1g	voveron 75mg	-	pcm1g	-
89	1244682	100	99	98	100	100	0	1	2	2	2	2	1	2	1	1	1	1	1	-	pcm1g	-	pcm1g	voveron 75mg	-
90	1250701	98	99	98	100	100	0	1	1	1	2	2	2	1	1	1	1	1	2	-	-	pcm1g	-	pcm1g	-
91	1252454	100	100	100	100	100	0	2	2	4	5	4	4	6	4	4	2	3	3	-	pcm1g	-	tramadol50mg	-	pcm1g
92	1258913	100	99	98	100	100	0	1	1	2	1	1	2	1	1	3	1	1	1	-	-	-	pcm1g	-	-
93	1678921	98	96	97	99	96	0	5	5	1	3	2	1	1	3	4	5	5	0	inf ropin	-	-	pcm1g	-	pcm1g
94	1711234	98	98	99	100	97	0	3	1	2	0	2	4	1	3	3	1	0	2	-	pcm1g	-	-	pcm1g	-
95	1972312	96	99	99	96	97	0	4	0	2	0	3	1	5	4	5	2	3	2	-	tramadol50mg	-	pcm1g	-	pcm1g
96	1226781	100	97	96	100	97	0	0	0	4	3	1	1	2	5	5	4	4	4	-	pcm1g	-	tramadol50mg	-	-
97	1445571	99	99	98	98	97	0	1	0	5	0	5	5	3	4	0	2	0	1	-	pcm1g	-	tramadol50mg	-	tramadol50mg
98	1765411	97	97	95	99	96	0	0	3	5	5	4	5	4	5	0	1	4	2	-	-	pcm1g	-	tramadol50mg	-
99	1782312	96	95	99	96	96	0	3	5	3	0	2	2	0	3	0	0	2	0	-	pcm1g	-	pcm1g	-	pcm1g
100	1879871	98	95	99	100	100	0	0	2	5	3	1	4	5	0	1	0	4	0	-	pcm1g	-	-	pcm1g	-

Sr. No.	MRD No	algesics used							Hb		Hct		TLC		S.Urea		S.Creatinine		S.Sodium		S.Potassium		S.Chl
		24hr	28hr	32hr	36hr	40hr	44hr	48hr	24 hr	48 hr	24 hr	48 hr	24 hr	48 hr	24 hr	48 hr	24 hr	48 hr	24 hr	48 hr	24 hr	48 hr	24 hr
55	3626	-	pcm1g	-	-	-	pcm1g	pcm1g	9.1	8.2	-	-	8.2	8.2	13	13	1	0.7	144	143	4.3	3.7	94
56	896223	tramadol50mg	-	-	pcm1g	-	-	-	10.3	12.1	-	-	8.1	8.7	39	41	0.5	0.6	144	145	3.8	3.8	97
57	1032978	pcm1g	-	tramadol50mg	-	-	-	-	12.8	13.1	-	-	6.3	7	33	33	0.9	1	140	142	4.8	4.3	105
58	887264	-	-	pcm1g	-	pcm1g	-	tramadol50mg	13.7	13.9	-	-	6.8	6.7	10	9	1.3	1.8	133	136	3.7	3.9	107
59	1085190	pcm1g	-	tramadol50mg	-	-	tramadol50mg	tramadol50mg	10	8.6	-	-	8.1	7.4	16	12	1.4	0.8	126	129	3	3.3	100
60	1094087	-	-	-	pcm1g	-	pcm1g	-	12.1	10.5	-	-	5.6	5	48	52	0.6	0.8	138	132	3.8	3.3	99
61	1125815	-	-	-	pcm1g	-	-	pcm1g	10.7	12.6	-	-	12.7	12.9	19	22	0.5	1.1	132	136	2.8	3.2	98
62	1010875	-	tramadol50mg	-	-	tramadol50mg	-	-	10.5	9.6	-	-	10.1	10.6	33	34	1.6	1.6	130	135	3.9	3.4	100
63	1131006	-	-	pcm1g	-	pcm1g	-	-	10.8	9.2	-	-	4.4	6.7	49	51	1.1	0.9	139	137	4	4.3	102
64	1132363	pcm1g	-	tramadol50mg	-	tramadol50mg	-	pcm1g	9.5	10.2	-	-	8.6	8.6	21	23	1	0.6	122	122	4.7	5.6	94
65	1016986	pcm1g	-	-	pcm1g	-	-	pcm1g	11.3	10.2	-	-	7.5	7.7	35	35	0.7	0.4	141	140	4.3	4.2	98
66	1137220	-	tramadol50mg	-	-	pcm1g	-	-	12.1	11.9	-	-	14.8	13.5	29	33	0.9	0.5	133	133	4.6	4.1	101
67	867815	-	tramadol50mg	-	tramadol50mg	-	pcm1g	-	11.4	12.3	-	-	6	8.6	16	15	1.1	1.1	137	140	4.5	4.1	106
68	1140962	-	pcm1g	-	-	tramadol50mg	-	-	8.8	9.6	-	-	4.8	6.3	12	7	0.9	0.8	132	130	3.2	4	101
69	1142450	-	pcm1g	-	-	-	pcm1g	-	12.7	13	-	-	6.9	6.2	22	18	1.6	1.6	137	133	4	3.3	109
70	879728	-	pcm1g	-	-	pcm1g	pcm1g	tramadol50mg	8.3	8.9	-	-	9.1	8.1	34	36	1	1.4	129	128	3.9	3.9	100
71	850981	-	pcm1g	-	-	pcm1g	-	pcm1g	12.8	12.4	-	-	12	11.6	23	28	0.8	0.9	136	135	3.7	4.6	101
72	1172799	tramadol50mg	-	-	-	pcm1g	-	pcm1g	12.1	12.1	-	-	8.4	9.9	33	29	1.1	0.8	144	147	3.4	4	103
73	1167571	-	-	-	tramadol50mg	-	pcm1g	-	9.2	7.9	-	-	9.4	8.8	25	28	0.8	0.8	131	130	3.3	3.7	100
74	1175684	-	tramadol50mg	-	pcm1g	pcm1g	-	-	9.4	9.6	-	-	5.1	4.2	15	13	1.3	0.9	134	131	4	3.2	102
75	955547	-	-	pcm1g	-	-	-	-	9	9	-	-	8.1	7	32	36	1.2	1	143	148	3.3	3.4	103
76	1201491	-	-	-	-	tramadol50mg	-	-	12.7	11.5	-	-	8.9	8.8	30	30	0.4	0.7	128	130	5	5.1	98
77	610793	tramadol50mg	-	pcm1g	-	-	pcm1g	pcm1g	9	8.7	-	-	9.8	10.4	30	28	1.5	1.5	128	130	5.2	4.9	100
78	1204874	-	tramadol50mg	-	tramadol50mg	-	pcm1g	pcm1g	11.1	11.1	-	-	7.6	10.1	12	8	0.6	0.4	126	128	4.4	4.5	94
79	1213340	pcm1g	-	-	tramadol50mg	-	tramadol50mg	tramadol50mg	9.9	9.2	-	-	5.7	6.1	30	27	0.6	1.1	137	136	4.5	4.7	103
80	344749	-	-	-	pcm1g	-	-	-	11.6	11.7	-	-	4.7	7.1	27	32	0.9	1	134	134	4.2	4.1	97
81	1213571	-	pcm1g	-	pcm1g	-	pcm1g	-	10.2	9.9	-	-	8.5	6.4	13	12	1.5	1.7	134	130	3.6	3.4	101
82	1215813	-	-	tramadol50mg	-	pcm1g	-	-	11	11.8	-	-	12.9	12.2	43	41	0.8	1	135	136	3.4	2.8	99
83	1215854	-	tramadol50mg	-	-	-	pcm1g	-	13.7	14	-	-	6.2	6.5	38	41	0.9	1.4	132	137	3.4	2.9	98
84	1220243	pcm1g	-	pcm1g	-	-	-	-	10.7	10.3	-	-	10.4	11	29	34	1.3	1.6	133	132	3.4	3.5	102
85	1228034	tramadol 50mg	-	pcm1g	-	-	pcm1g	-	10.2	10	-	-	8.4	8.6	36	38	1.1	1.2	128	127	3.8	3.9	98
86	1243099	tramadol 50mg	-	pcm1g	-	-	-	-	10.8	10.5	-	-	7.8	7.4	36	35	0.8	1.1	134	129	4.5	4.6	102
87	1247934	-	pcm1g	-	tramadol 50mg	-	pcm1g	-	13.2	12.8	-	-	8.2	7.6	36	34	1.1	1.2	140	138	3.7	4.2	100
88	1247920	fentanyl50mcg	-	pcm1g	voveron75mg	pcm1g	-	pcm1g	10.2	10.8	-	-	7.6	8.6	34	26	0.9	1.1	129	130	4.2	4.3	98
89	1244682	pcm1g	-	pcm1g	-	pcm1g	-	pcm1g	10.8	10.4	-	-	10.4	9.7	45	38	1.1	1.07	138	135	4.7	4.6	106
90	1250701	voveron75mg	-	-	pcm1g	-	-	pcm1g	13.2	13.6	-	-	9.2	9.4	28	35	1.08	0.98	135	138	4.3	4.8	102
91	1252454	-	pcm1g	tramadol50mg	-	pcm1g	-	pcm1g	8.7	9.2	-	-	17.1	12.2	27	28	1.4	1	133	132	4.7	4.8	100
92	1258913	pcm1g	-	-	tramadol50mg	-	-	-	9.9	10.1	-	-	10.4	9.7	45	38	1.1	1.07	138	135	4.7	4.6	106
93	1678921	-	-	-	-	tramadol50mg	-	-	12.7	11.5	-	-	8.9	8.8	30	30	0.4	0.7	128	130	5	5.1	98
94	1711234	tramadol50mg	-	pcm1g	-	-	pcm1g	pcm1g	9	8.7	-	-	9.8	10.4	30	28	1.5	1.5	128	130	5.2	4.9	100
95	1972312	-	tramadol50mg	-	tramadol50mg	-	pcm1g	pcm1g	11.1	11.1	-	-	7.6	10.1	12	8	0.6	0.4	126	128	4.4	4.5	94
96	1226781	pcm1g	-	-	tramadol50mg	-	tramadol50mg	tramadol50mg	9.9	9.2	-	-	5.7	6.1	30	27	0.6	1.1	137	136	4.5	4.7	103
97	1445571	-	pcm1g	-	-	-	-	-	10.2	10.2	-	-	6	6.5	26	26	1	1.2	136	138	4.1	4.3	93
98	1765411	-	tramadol50mg	-	pcm1g	-	-	pcm1g	11.2	10.8	-	-	8	8.6	25	24	1	1.4	142	137	4.1	3.9	97
99	1782312	-	pcm1g	-	-	-	pcm1g	pcm1g	9.1	8.2	-	-	8.2	8.2	13	13	1	0.7	144	143	4.3	3.7	94
100	1879871	tramadol50mg	-	-	pcm1g	-	-	-	10.3	12.1	-	-	8.1	8.7	39	41	0.5	0.6	144	145	3.8	3.8	97

Sr. No.	MRD No	Postoperative Inv											DOS SCORE				MMSE SCORE			
		oride	S.Calcium		RBS		Average Pain Score (CNPI)			Analgesics used (amount)										
		48 hr	24 hr	48 hr	24 hr	48 hr	0hr	24 hr	48 hr	0hr	24 hr	48 hr	Pre-op	0hr	24hr	48hr	Pre-op	0hr	24hr	48hr
55	3626	93	-	-	106	101	0	3	1	-	pcm	pcm+tramadol	1	1	1	1	27	27	28	27
56	896223	98	-	-	134	129	0	3	2	-	pcm+tramadol	pcm	1	2	1	3	27	26	28	28
57	1032978	105	-	-	101	99	0	3	3	-	pcm	pcm+tramadol	1	1	2	1	28	28	28	28
58	887264	108	-	-	153	162	0	3	3	-	pcm	pcm	2	5	3	2	27	27	28	28
59	1085190	100	-	-	200	201	0	2	3	-	pcm	pcm+tramadol	1	2	1	1	28	27	28	28
60	1094087	99	-	-	120	132	0	3	3	-	pcm	pcm	1	2	1	1	29	28	28	28
61	1125815	98	-	-	113	117	0	3	2	-	pcm+tramadol	pcm	2	2	1	1	28	27	27	28
62	1010875	100	-	-	175	174	0	3	3	-	pcm+tramadol	pcm	2	2	3	1	27	28	28	28
63	1131006	101	-	-	116	149	0	3	3	-	pcm	tramadol+pcm	1	1	1	1	28	27	28	28
64	1132363	94	-	-	218	209	0	4	3	-	pcm	pcm+tramadol	2	2	1	1	27	28	28	29
65	1016986	98	-	-	135	152	0	2	1	-	pcm	-	1	2	2	1	28	27	27	29
66	1137220	100	-	-	160	175	0	2	2	-	pcm+tramadol	pcm+tramadol	2	4	5	3	28	27	27	28
67	867815	105	-	-	123	122	0	3	4	-	pcm	pcm+tramadol	1	2	3	1	28	29	27	26
68	1140962	101	-	-	107	99	0	1	1	-	pcm	tramadol	2	3	4	2	27	25	25	26
69	1142450	109	-	-	137	137	0	2	3	-	pcm	-	1	1	2	2	26	27	28	27
70	879728	99	-	-	174	199	0	3	3	-	pcm	pcm+tramadol	2	3	4	3	28	26	28	28
71	850981	100	-	-	116	139	0	3	3	-	pcm	pcm	1	1	1	1	28	28	29	28
72	1172799	102	-	-	130	137	0	3	2	-	inf ropin	pcm+tramadol	1	2	1	1	28	27	28	27
73	1167571	100	-	-	109	107	0	2	3	-	pcm	pcm+tramadol	3	4	5	3	26	27	27	25
74	1175684	102	-	-	123	147	0	3	4	-	pcm+tramadol	pcm	2	2	1	2	28	28	28	28
75	955547	102	-	-	97	68	0	3	3	-	pcm	-	1	1	1	1	29	28	27	28
76	1201491	98	-	-	71	103	0	3	3	-	pcm	tramadol	1	1	1	1	28	27	28	28
77	610793	102	-	-	20	7	0	2	2	-	pcm	tramadol	1	2	2	1	29	27	27	28
78	1204874	94	-	-	90	98	0	2	4	-	pcm +tramadol	pcm	1	1	2	1	28	29	28	29
79	1213340	102	-	-	222	229	0	2	4	-	tramadol	pcm	3	4	5	3	27	27	27	28
80	344749	97	-	-	122	111	0	2	2	-	pcm	tramadol	1	1	2	1	29	28	28	29
81	1213571	102	-	-	129	141	0	2	1	-	tramadol + pcm	pcm	2	1	1	1	28	28	27	28
82	1215813	98	-	-	110	136	0	3	2	-	pcm	pcm+tramadol	1	2	2	1	28	29	28	29
83	1215854	99	-	-	132	133	0	2	3	-	pcm +tramadol	pcm	1	2	1	1	28	29	27	29
84	1220243	101	-	-	187	182	0	3	1	-	pcm	pcm	1	1	2	1	28	27	28	28
85	1228034	102	-	-	140	135	0	5	3	-	pcm+tramadol	pcm+tramadol	4	5	7	5	24	23	23	23
86	1243099	104	-	-	116	90	0	2	2	epidural inf + pcm+ tramadol	-	pcm	2	1	2	1	28	29	28	27
87	1247934	102	-	-	118	83	0	3	2	-	pcm+voveron	pcm+tramadol	2	3	2	3	28	27	27	28
88	1247920	99	-	-	103	106	0	6	3	-	pcm+voveron	pcm+fentanyl	5	6	6	5	24	25	25	24
89	1244682	108	-	-	175	136	0	2	3	-	pcm+voveron	-	2	2	2	1	27	28	28	29
90	1250701	102	-	-	195	173	0	1	2	-	pcm+voveron	-	0	1	1	0	28	29	29	29
91	1252454	103	-	-	144	132	3	5	3	-	pcm+tramadol	pcm+tramadol	4	5	6	6	27	24	26	27
92	1258913	108	-	-	236	256	0	2	3	-	pcm+tramadol	-	2	2	2	1	27	28	28	29
93	1678921	98	-	-	71	103	0	3	3	-	pcm	tramadol	1	1	1	1	28	27	28	28
94	1711234	102	-	-	20	7	0	2	2	-	pcm	tramadol	1	2	2	1	29	27	27	28
95	1972312	94	-	-	90	98	0	2	4	-	pcm +tramadol	pcm	1	1	2	1	28	29	28	29
96	1226781	102	-	-	222	229	0	2	4	-	tramadol	pcm	3	4	5	3	27	27	27	28
97	1445571	92	-	-	111	114	0	3	2	-	pcm	pcm+tramadol	1	2	1	1	28	26	27	27
98	1765411	96	-	-	113	76	0	4	3	-	pcm	pcm+tramadol	2	2	1	1	27	28	27	29
99	1782312	93	-	-	106	101	0	3	1	-	pcm	pcm+tramadol	1	1	1	1	27	27	28	27
100	1879871	98	-	-	134	129	0	3	2	-	pcm+tramadol	pcm	1	2	1	3	27	26	28	28

Baba Farid University
of Health Sciences
Sadiq Road
Faridkot-151203 (Pb) INDIA
Phone: 01639-256242,256243
Tele Fax: 01639-250245
Email: Examinations@bfuhs.ac.in

No. BFUHS/2K21p-TH/ 42 Date 24/11/21

The Principal,
DMC, Ludhiana.

Subject: Approval of Plan of Thesis.

This is to inform you that the Faculty of Medical Sciences in its meeting held on 29.10.2021 has approved the plan of thesis of **Rushal**, a student of your college for **MD Anaesthesiology** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
Delirium observation screening (dos) scale as a preoperative predictive tool for development of postoperative delirium in elderly.

Supervisor
Dr. Shikha Gupta
Prof.,
Dept. of Anaesthesiology,
DMCH, Ludhiana.

Co-Supervisor

Dr. Namrata
Assoc. Prof.,
Dept. of Anaesthesiology,
DMCH, Ludhiana.

Dr. Gagandeep Singh
Prof. & Head,
Dept. of Neurology,
DMCH, Ludhiana.

The student has to submit the four copies of thesis (along with PDF format) , to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She must directed to attach a photocopy of this letter with the forwarding letter while submitting thesis to the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic,(if any).

Dr. S P Singh MS(Oph)
Controller of Examinations

Note :

23. *If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.*
24. *The student may submit the thesis as per the schedule already conveyed i.e for May/June examination 30th Nov of the preceding the year of examination and for Nov/Dec examinations 31st May of the year of examination.*

DELIRIUM OBSERVATION SCREENING (DOS) SCALE AS A PREOPERATIVE PREDICTIVE TOOL FOR DETECTION OF POSTOPERATIVE DELIRIUM IN ELDERLY

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED

IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

DOCTOR OF MEDICINE

In

ANAESTHESIOLOGY

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES

FARIDKOT

DECEMBER 2020

Dr RUSHAL

DEPARTMENT OF ANAESTHESIOLOGY
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA
LUDHIANA, PUNJAB-141001

ABSTRACT OF PLAN OF THESIS

Title	DELIRIUM OBSERVATION SCREENING (DOS) SCALE AS A PREOPERATIVE PREDICTIVE TOOL FOR DETECTION OF POSTOPERATIVE DELIRIUM IN ELDERLY
For the degree of	M.D. Anaesthesia
Name of the candidate	Dr. Rushal
Supervisor	Dr. Shikha Gupta, Professor, Department of Anaesthesia, DMCH Ludhiana
Co-supervisors	Dr. Namrata, Associate Professor, Department of Anaesthesia, DMCH Ludhiana Dr. Gagandeep Singh, Professor & Head, Department of Neurology, DMCH Ludhiana.
Institution	Dayanand Medical College and Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Postoperative delirium is one of the major causes of increased postoperative morbidity and mortality in the elderly population (Incidence ~ 5-52%). It impairs postoperative recovery leading to increased length of hospital stay, increased healthcare cost, increased one year mortality, functional decline and long-term cognitive impairment, etc. Hence, we propose to study the efficacy of Delirium Observation Scale (DOS scale) as a preoperative predictive tool for development of postoperative delirium in the elderly.

Aim of Study: Accuracy of DOS scale for better and early preoperative detection of postoperative delirium in elderly.

Materials & methods: A prospective randomized study will be conducted on 100 elderly patients (>60 years of age[2]) of ASA II, III undergoing non-cardiac surgery under regional anaesthesia. In all the patients, MMSE and DOS scale will be applied preoperatively at the time of pre-anaesthesia checkup, one day prior to surgery. The scores of MMSE and DOS scale will be evaluated after shifting the patient to the recovery room, 24 and 48 hours after surgery. The scores of the MMSE and DOS scale will be recorded and evaluated for efficacy of preoperative detection of postoperative delirium in the elderly. Data thus collected will be analyzed statistically.

Clinical Significance: This study will focus on the efficacy of DOS scale as a preoperative predictive tool for the detection of postoperative delirium in the elderly undergoing non cardiac elective surgery.

Keywords: Postoperative delirium (POD), DOS scale, MMSE scale, elderly, predictive tool, cognitive function.

(Signature)	(Signature)	(Signature)	(Signature)	(Signature)
Candidate	Co-Supervisor	Co-Supervisor	Supervisor	Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis titled **"DELIRIUM OBSERVATION SCREENING (DOS) SCALE AS A PREOPERATIVE PREDICTIVE TOOL FOR DETECTION OF POSTOPERATIVE DELIRIUM IN ELDERLY"** exist in the Department of Anaesthesiology at Dayanand Medical College and Hospital, Ludhiana and will be provided to the candidate. We will see that the data being included in the thesis are genuine and is collected by the candidate herself under our supervision and guidance.

Supervisor

Dr. Shikha Gupta
Professor
Dept. of Anaesthesia
DMCH, Ludhiana

Co-Supervisor

Dr. Namrata
Associate Professor
Dept. of Anaesthesia
DMCH, Ludhiana

Co-Supervisor

Dr. Gagandeep Singh
Professor & Head
Dept. of Neurology
DMCH, Ludhiana

Head of the Department

Dr. Dinesh Sood
Professor & Head
Department of Anaesthesia
DMCH, Ludhiana

Place: LUDHIANA

Date: 14/March/2021

APPROVAL PROFORMA
BY
RESEARCH & ETHICAL COMMITTEE
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA

Name of candidate	DR. RUSHAL
Department	Anaesthesia
Topic of Thesis	DELIRIUM OBSERVATION SCREENING (DOS) SCALE AS A PREOPERATIVE PREDICTIVE TOOL FOR DEVELOPMENT OF POSTOPERATIVE DELIRIUM IN ELDERLY
Likely date of appearing in PG examination	MAY-JUNE 2023
Date of enrollment	26th July 2020
Name of Head of Department	Dr. Dinesh Sood
1) Supervisor **2) Co-Supervisor**	Dr. Shikha Gupta Dr. Namrata
Signature of Members of Research Committee with Stamp	**Signature of Members of Ethics Committee with Stamp**
Dr. Harpreet Kaur (Professor & Head, Pathology)	Mr. R K Sharma (Legal Expert)
Dr. Jaspal Singh (Professor & Head, Surgery)	Dr. Ramit Mahajan (Associate Professor, Gastroenterology)
Dr. Dinesh Gupta (Professor & Head, Medicine)	Dr. Anu Sharma (Professor, Anatomy)
Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)	Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)
Dr. Gurpreet S Wander (Vice Principal)	Dr. Gurpreet S Wander (Vice Principal & Professor & Head, Cardiology)
	Dr. Gagandeep Singh (Secretary, Ethics Committee Professor & Head, Neurology)

Approved: Yes / No

Dr. Sandeep Puri
Chairperson
Research Committee

Approved: Yes / ~~No~~

Prof. Arvind Malhotra
Chairperson
Ethics Committee

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

1	NAME OF THE CANDIDATE AND ADDRESS	DR. RUSHAL H/NO. 27-28 MAIN MARKET NANGAL TOWNSHIP DISTT. ROPAR
2	NAME OF THE INSTITUTE	DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA
3	COURSE OF STUDY AND SUBJECT	M.D. ANAESTHESIOLOGY
4	DATE OF ADMISSION OF COURSE	26/July/2020
5	TITLE OF THE TOPIC	DELIRIUM OBSERVATION SCREENING (DOS) SCALE AS A PREOPERATIVE PREDICTIVE TOOL FOR DEVELOPMENT OF POSTOPERATIVE DELIRIUM IN ELDERLY.

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Postoperative delirium is one of the major causes of increased postoperative morbidity and mortality in the elderly population undergoing surgery. Incidence lies in the range of 5 to 52% after non cardiac surgery.[1] As the population of elderly has increased, the number of elderly patients posted for surgery have also increased. The development of delirium following surgery has some significant potential effects on patient outcomes. Postoperative delirium is often underdiagnosed. It impairs postoperative recovery leading to increased length of hospital stay, increased healthcare cost, increased 1 year mortality, functional decline and long-term cognitive impairment [2-4], etc. After an initial episode of delirium, the post-episode treatment or intervention has little effect on its severity and duration.[5] However, before its onset, delirium is assumed to be preventable, which emphasizes the importance of early detection and its prevention. While multiple screening tools exist, many are cumbersome to execute. Efforts have been made to shorten them, but there are many concerns about their specificity.[6-10] The Delirium Observational Screening Scale(DOS) is a brief screening tool based on observation. It is a 13-Item scale of verbal and non-verbal behaviour which helps to recognise delirium based on the everyday activity[11]. Recent studies[12,13] suggest the validity of DOS scale as a screening tool for the early detection of delirium. Early detection and prompt treatment of the inciting factors are of utmost importance to prevent and minimize the deleterious outcomes of delirium. It will facilitate early aggressive treatment of the predisposing factors and early consent for postoperative deleterious outcomes. The DOS Scale has never been used to assess preoperative and postoperative delirium in surgical patients, hence we propose to study the efficacy of DOS scale as a preoperative predictive tool for the development of postoperative delirium in the elderly.

6.2 REVIEW OF LITERATURE

Christopher J. Jankowski et al in May 2011 evaluated the Cognitive and functional predictors of postoperative delirium using Confusion Assessment Method in elderly patients undergoing elective joint arthroplasty and concluded that reduced preoperative neurocognitive and functional status predict the development of Postoperative Delirium(POD.).[14]

Robbert C. Bakker et al in September 2011 studied the preoperative predictors of delirium after cardiac surgery in elderly patients. They assessed the patients using Mini Mental State Examination (MMSE) preoperatively and used CAM-ICU scale for diagnosis of delirium postoperatively. They concluded that low MMSE scores and high creatinine level prior to surgery are important independent predictors of delirium.[15]

Yong Guo et al in April 2016 studied the prevalence and risk factors of postoperative delirium in elderly hip fracture patients and concluded that correcting the modifiable risk factors might help prevent postoperative delirium. They found that preventive strategies include nutritional support, tight blood glucose control, improvement of liver function, preoperative infection control and minimizing surgical injury or blood loss.[16]

Chen-guang Wang et al in 2018 investigated the incidence and related risk factors of delirium in elderly patients with hip fracture and concluded that elderly patients over the age of 75 years with the history of diabetes or ASA > II were at higher risk of Postoperative Delirium. The incidence was found to be 19.29%.[17]

Elisabeth C. W. Neefjes et al in February 2019 reported the accuracy of Delirium Observational Screening Scale (DOS) as a screening tool for delirium in patients with advanced cancer and concluded that DOS is an accurate screening tool for delirium in patients with advanced cancer with a sensitivity of >99.9%.[18]

Leandra A. Amado et al in August 2019 conducted a study on preoperative cognitive dysfunction in older elective noncardiac surgical patients in South Africa. They used Mini-Cog Test for the preoperative

objective assessment of cognition. They concluded that undiagnosed pre-existing cognitive dysfunction was common in older patients awaiting surgery. The prevalence of undiagnosed pre-existing cognitive dysfunction was found to be 57.2% using the Mini-Cog test.[19]

Arissara Iamaroon et al in 2020 conducted a study to identify incidence, risk factors and outcomes associated with Postoperative Delirium in older adult patients who underwent Noncardiac surgery. Functional and cognitive status were assessed preoperatively using Barthel Index (BI) and the modified Informant Questionnaire on Cognitive Decline in the Elderly(IQCODE), respectively. Postoperative delirium was diagnosed based on the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition criteria. They concluded that Postoperative Delirium remains a common surgical complication with an incidence of 11.6%. Patients with preexisting dementia and age ≥ 75 years are the most vulnerable high-risk group.[20]

Masahiro Matuski et al published a study in 2020 in which they evaluated the incidence and risk factors of Postoperative delirium in elderly patients undergoing urological surgery. They used Hasegawa Dementia Scale - Revised (HDSR) score preoperatively and Intensive Care Delirium Screening checklist postoperatively to assess delirium. They found out that preoperative medical history, cognitive status, low serum albumin level and operative duration were associated with development of delirium. They suggested that the HDSR scale is a useful tool for assessment of the risk of delirium.[21]

6.3 AIMS AND OBJECTIVES OF THE STUDY

Primary Objective:

- To calculate the incidence and prevalence of pre and postoperative delirium in elderly patients undergoing noncardiac surgery under regional anaesthesia.

Secondary Objectives:

- To calculate the incidence of new development of delirium postoperatively in cases which were not picked up during initial assessment in the preoperative period.
- To compare the change in the severity levels of delirium postoperatively from preoperative levels in patients with preoperative delirium.

7. MATERIALS AND METHODS

7.1 SOURCE OF DATA

A randomized observational study will be conducted in the department of Anaesthesiology, Dayanand Medical College & Hospital, Ludhiana after approval by the Institutional Ethics Committee on a total of 100 elderly patients (age group > 60 years)[14] undergoing noncardiac surgeries under regional anaesthesia. They will be assessed with DOS scale for delirium preoperatively during pre-anaesthesia checkup and then postoperatively after shifting the patient to the recovery room, after 24 and 48 hours. The scores of the DOS scale at the respective time intervals will be measured as the primary outcome of the study. A written informed consent will be obtained from each patient.

7.2 METHOD OF COLLECTION OF DATA

Inclusion Criterion

- ASA I, II, III
- Elderly (>60 yrs)[22] age group
- Elective procedures under regional anaesthesia (neuraxial anesthesia or peripheral nerve blocks)

Exclusion Criterion

- History of Neurological Illness i.e. epilepsy, parkinsonism, brain injury or neurosurgery.
- History of diseases such as schizophrenia, bipolar disorder, dementia, mania, depression, compulsive disorders.
- Inability to comprehend English, Hindi or Punjabi language
- Refusal to participate in the study
- Patients on Neuroleptic or antipsychotic medications (Fluphenazine, Haloperidol, Aripiprazole, Clozapine, Olanzapine, Quetiapine, Risperidone, Benzodiazepines, Barbiturates, Chlorpromazine, etc.)
- History of Drug Dependence
- History of surgery in previous 6 months

Routine pre-anaesthesia checkup along with physical examination and relevant investigations will be noted. Patients and their attendants will be explained about the study being conducted and written informed consent will be taken.

Preoperative Delirium will be measured using a 13 point - DOS scale by the treating anaesthetist in a secluded area free from noise and distraction. Patients with score 3 or more than 3 will be considered to be in delirium.

The premedication given to the patient in the preoperative period will be noted. After arrival in the operating room, standard monitoring in the form of SpO2, non-invasive blood pressure (NIBP), five lead ECG, HR, would be done throughout the procedure and recorded as per the discretion of the treating anaesthetist. Regional Anaesthesia (Neuraxial or Peripheral Nerve Block) will be administered to the patient. The drugs given intraoperatively will be noted. During the surgical procedure, operative characteristics such as the type of surgery, the duration of surgical procedure, the type of anaesthesia (neuraxial block or peripheral nerve block), the volume of blood loss, the volume of fluids and blood transfused will be recorded. Intraoperative Hypotension (defined as either systolic blood pressure less than 90 mmHg or less than 20% of the baseline blood pressure for more than 5 minutes) and Intraoperative hypoxemia (defined as oxygen saturation of below 90%) will also be recorded and treated as per protocol.

The time of shifting of patients to the Postoperative Recovery Room will be considered as 0 hour.

In the Postoperative Recovery Room, standard monitoring will be done and DOS score will be recorded. Postoperative analgesia will be given using Inj. Paracetamol (maximum 1g IV per dose 6 hourly). In case of Breakthrough Pain (Checklist of Non-verbal Pain Indicators (CNPI) 4 or more than 4) Inj. Fentanyl 1mcg/kg IV bolus will be given followed by 1mcg/kg/hr by continuous IV infusion and may be adjusted upward or downward upto 2mcg/kg/hr as required by fluctuations in analgesic requirements.[23] The preoperative and postoperative Delirium assessment using DOS Score will be done by different anaesthetists in

order to remove the study bias. Scores will be calculated at respective time intervals (at the time of shifting patient to recovery room, at 24 hours and 48 hours post operatively). Reversible causes of delirium such as electrolyte disturbances will be corrected .

Outcome

The following parameters will be statistically analysed :

- Incidence and prevalence of pre & postoperative delirium
- Sensitivity and Specificity of DOS Score

Statistical Analysis

A post hoc power analysis was conducted using the software package, G*Power version 3.1.9.2 (Franz Faul, university kiel, Germany). The alpha level used for this analysis was $p<0.05$ and beta was 0.20. Sample size was estimated from the results of previous study[24]using the sensitivity of DOS score as the parameter, which is the primary outcome of our study. Our sample size came out to be 100 subjects at power of 0.99 and with an effect size of 3.45 with 10% chance of error with $\alpha = 0.05$, $\beta = 0.20$ and confidence interval of 95%.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

No

7.4 HAS ETHICAL CLEARENCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Attached alongwith.

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PROFORMA

Name of the patient : Date of Admission : Height :

MRD No. : Date of Surgery : Weight :

Age/Sex : History of Drug Allergy : BMI :

Significant History -

_____

_____

Comorbidities -

Diabetes Mellitus ( ) ESRD or CKD ( ) Thyroid disease ( )

Hypertension ( ) Cirrhosis ( ) Any other ( )

Heart Disease ( ) Cancer ( )

Smoking History (No. of packs per day) - _____

Alcoholic History (No.of drinks per day) - _____

Investigations

Hb- S.Urea- S.Chloride-

TLC- S.Creatinine- S.Calcium-

Hematocrit- S.Sodium- RBS-

PLT- S.Potassium-

S.TSH (If h/o Thyroid disease) -

Preoperative Assessment-

SBP/DBP (mmHg) - SpO2- DOS Score-

RR - HR- MMSE Score-

Premedication (if any) - _____

Intraoperative Assessment-

Type and Duration of Surgery- _____

Type of Anaesthesia- _____

Sedative Drugs used (if any)- _____

Analgesic(s) used intraoperatively- _____

Volume of Fluids transfused - _____

Volume of Blood transfused - _____

Volume of Blood loss - _____

Episodes of Hypotension(1 or > 1) - _____

Episodes of Hypoxemia (SpO2 <90%) - _____

Postoperative Assessment -

Vitals	SBP/DBP	HR	SpO2	Pain Score (CNPI)	Analgesics used
0hr					
4hr					
8hr					
12hr					
16hr					
20hr					
24hr					
28hr					
32hr					
36hr					
40hr					
44hr					
48hr					

Postoperative Inv	24 hr	48 hr
Hb		
Hct		
TLC		
S.Urea		
S.Creatinine		
S.Sodium		
S.Potassium		
S.Chloride		
S.Calcium		
RBS		

	0hr (at the time of shifting to recovery)	24hr	48hr
Average Pain Score (CNPI)			
Analgesics used (amount)			

	Pre-op	0hr (at time of shifting to recovery)	24hr	48hr
DOS SCORE				
MMSE SCORE				

PAIN SCALE FOR COGNITIVELY IMPAIRED, NON-VERBAL ADULTS

Checklist of Non-Verbal Pain Indicators (CNPI)

Indicators:	With Movement	At Rest
Vocal Complaints (non-verbal expression of pain demonstrated by moans, groans, grunts, cries, gasps, sighs)		
Facial Grimaces and Winces (furrowed brow, narrowed eyes, tightened lips, dropped jaw, clenched teeth, distorted expression)		
Bracing (clutching or holding onto bed/chair, caregiver, or affected area during movement)		
Restlessness (constant or intermittent shifting of position, rocking, intermittent hand motions, inability to keep still)		
Rubbing (massaging affected area)		
Vocal Complaints (verbal expression of pain using words, e.g., "ouch" or "that hurts," cursing during movement or exclamation of protest, e.g., "stop" or "that's enough")		
Total Score		

Fig. 1 CNPI scale

Score a 0 if the behavior was not observed.
Score a 1 if the behavior occurred even briefly during activity or at rest.
The total number of indicators is summed for the behaviors observed at rest, with movement, and overall

Postoperative pain intensity using CNPI scale -

13 items DOS scale

	OBSERVATION The patient	At PAC			At 24 hrs postop			At 48 hrs postop			TOTAL SCORE (0 - 13)
		never	sometimes - always	unable	never	sometimes - always	unable	never	sometimes - always	unable	
1	Dozes of during conversation or activities	0	1	-	0	1	-	0	1	-	
2	is easy distracted by stimuli from the environment	0	1	-	0	1	-	0	1	-	
3	Maintains attention to conversation or action	1	0	-	1	0	-	1	0	-	
4	Does not finish question or answer	0	1	-	0	1	-	0	1	-	
5	Gives answers that do not fit the question	0	1	-	0	1	-	0	1	-	
6	Reacts slowly to instructions	0	1	-	0	1	-	0	1	-	
7	Thinks to be somewhere else	0	1	-	0	1	-	0	1	-	
8	Knows which part of the day it is	1	0	-	1	0	-	1	0	-	
9	Remembers recent event	1	0	-	1	0	-	1	0	-	
10	Is picking, disorderly, restless	0	1	-	0	1	-	0	1	-	
11	Pulls ivtubes, feeding tubes, catheters etc.	0	1	-	0	1	-	0	1	-	
12	Is easy or sudden emotional	0	1	-	0	1	-	0	1	-	
13	Sees/hears things which are not there	0	1	-	0	1	-	0	1	-	
TOTAL SCORE (0 - 13)											
DOS SCALE FINAL SCORE =											

⇓

DOS SCALE final score	< 3	not delirious
	≥ 3	Probably delirious

Directions for usage of DOS Scale -

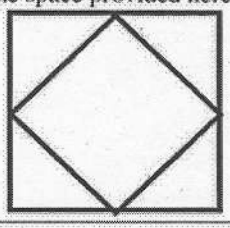
never - During this assessment, the described behavior was not observed (CIRCLE THE APPROPRIATE NUMBER IN THIS COLUMN)

sometimes- During this assessment, the described behavior was always observed once, or a few times or even a the time (CIRCLE THE APPROPRIATE NUMBER IN THIS COLUMN)

Unable - During this assessment, the described behavior was not observed since the patient was asleep or did no give necessary verbal responses OR the rater does not find himself/herself competent to observe the absence or presence of the behavior (CIRCLE THE APPROPRIATE NUMBER IN THIS COLUMN)

Directions for scoring - For each assessment, the total score is calculated by counting the circled ratings.
For the version with 13 items, two scores are allotted:
Never = 0 points ;
Sometimes or always = 1 point

HINDI MENTAL STATE EXAMINATION (HMSE)

Q No.	Question	Score	
		Correct	Wrong
1.	Is it morning or afternoon or evening? यह सुबह है, दोपहर है या शाम है?	1	0
2.	What day of the week is today? आज सप्ताह का कौनसा दिन है?	1	0
3.	What date is it today? आज कौन सी तारीख है?	1	0
4.	Which month is today? आज कौन सा महीना है?	1	0
5.	What season of the year is this? यह साल का कौनसा मौसम है?	1	0
6.	Under which post office does your village come? कौन से पोस्ट ऑफीस के तहत आपका गाँव पड़ता है?	1	0
7.	Which district does your village fall under? किस जिले में आपका गाँव पड़ता है?	1	0
8.	Which village are you from? आप कौन से गाँव से हैं?	1	0
9.	Which block (If village has only blocks) OR Which numbered area is this? आपका गाँव कौन से ब्लॉक या क्षेत्र में पड़ता है?	1	0
10.	Which place is this? ये कौन सी जगह है?	1	0
11.	(I went to Delhi and brought three things – Mango, chair, and coin) Can you tell me what are the three things I brought from Delhi? (मैं दिल्ली गया और चीज़ें लाया - आम, कुर्सी और सिक्का) क्या आप बता सकते हैं की मैं क्या तीन चीज़ें लाया था?	1 2 3	
12.a	Now can you tell me names of the days of the week starting from Sunday? अब आप मुझे रविवार से शुरू करते हुए सप्ताह के सभी दिनों के नाम बता सकते हैं?	1 2 3 4 5	
12.b	Now can you tell me names of the days backwards? अब आप उल्टी तरफ से सभी दिनों के नाम बता सकते हैं?		
13-15.	What are the names of the three things, which I told you have brought from Delhi? मैं दिल्ली से क्या तीन चीज़ें लाया था?	1 2 3	
16.	(Show the subject the wrist watch and pen) Can you tell me these objects? क्या आप इन वस्तुओं के नाम बता सकते हैं? (If yes, Items 17 & 18 apply) (If No, Item 17(a) apply.		
17.	Show him the wrist watch and say - what is this? यह क्या है? OR	1	0
17a.	If necessary, Identification of watch by touching what is this? यह क्या है?		
18.	Show him the pen and say – what is this? यह क्या है? OR	1	0
18a.	(If necessary) Identification of pen by Touching what is this? यह क्या है?		
19.	Now I am going to say something, listen carefully and repeat it exactly as I say after I finish Phrase: "NEITHER THIS NOR THAT" अब मैं कुछ कहूँगा और मेरे कहने के बाद आप उसे दोहराना : "ना तो यह और ना ही वह"	1	0
20.	Now look at my face and do exactly what I do. अब मेरे चेहरे को देखो और जो मैं करूंगा वह आप भी करो Close your eyes. अपनी आखें बंद करो	1	0
21.	First you take the paper in your right hand, then with your both hands, fold it into half once and then give the paper back to me. पहले आप काग़ज़ अपने दाहिने हाथ में ले और फिर दोनों हाथों से उसे बीच में से मोड़ कर वापस करें	1 2 3	
22.	Now say a line about your house? (something specifically about your houses) अब आप अपने घर के बारे में एक वाक्य बोलिए NOT INCLUDED IN HMSE TOTAL If given -1, Not given – 0.		
23.	Here is a drawing, you must copy this drawing exactly as shown in the space provided here. इस चित्र को देखिए और हूबहू इसके जैसा चित्र बनाइए  Score: Must draw two four sided figure =1 One figure should be mostly inside the other =2 Orientation of the figures should be obviously appropriate =3	1	0
	TOTAL SCORE	/31	

24-30: no cognitive impairment
18-23: mild cognitive impairment
0-17: severe cognitive impairment

Signature of Candidate Signature of Supervisor Signature of Co-Supervisor

INFORMED PATIENT CONSENT

Date: _____

I.....D/o, W/o, S/o..... .....am willing to participate in the study **"DELIRIUM OBSERVATION SCREENING (DOS) SCALE AS A PREOPERATIVE PREDICTIVE TOOL FOR DEVELOPMENT OF POSTOPERATIVE DELIRIUM IN ELDERLY"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

....
Signature of the Witness Signature of the patient

Name:

Signature of Supervisor **Signature of Candidate**

मरीज अनुमति फार्म

तिथि _____

मैं _____ पत्नी/पुत्र/पुत्री _____ निवासी _____ इस शोधकार्य **"DELIRIUM OBSERVATION SCREENING (DOS) SCALE AS A PREOPERATIVE PREDICTIVE TOOL FOR DEVELOPMENT OF POSTOPERATIVE DELIRIUM IN ELDERLY"** में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है की यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामुली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____ _____

गवाह के हस्ताक्षर रोगी के हस्ताक्षर/अंगूठे का निशान

नाम: नाम:

_____

अन्वेषक के हस्ताक्षर

_____

विद्यार्थी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫ਼ਾਰਮ

ਮਿਤੀ _____

ਮੈ _____ ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ _____ ਵਾਸੀ _____

"DELIRIUM OBSERVATION SCREENING (DOS) SCALE AS A PREOPERATIVE PREDICTIVE TOOL FOR DETECTION OF POSTOPERATIVE DELIRIUM IN ELDERLY" ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ_ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ _ ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ _____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

_____

ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ